

The Research Critique Process and the Evidence-Based Appraisal Process

Carol Boswell and Sharon Cannon

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Chapter Objectives

At the conclusion of this chapter, the learner will be able to:

1. Provide a rationale for completing a research critique.
2. List the necessary elements in a research critique.
3. Examine the evidence-based appraisal.
4. Evaluate evidence needed for clinical decision making.
5. Use evidence-based practice guidelines to manage holistic nursing practice.

Key Terms

Critique

Qualitative research

Hypothesis

Quantitative research

■ Rationale for Doing a Research Critique

When a critical question in nursing practice has been posed, the immediate reaction is often itself a question: What's in the literature? A common assumption made by most people is that the printed words are absolute or true. This assumption is even more commonplace when the literature is a researched study. Unfortunately, not all published research is scientifically sound. As a result, it is imperative that a nurse be able to critically assess a report.

According to Burns and Grove (2009), in the 1940s and 1950s nursing research generated critiques that were less than pleasant. Consequently, little nursing research was undertaken until the 1980s and 1990s. No studies are without some imperfections, but fearing imperfect studies is not a valid excuse for failure to conduct research. The basic concept of research management is that the researcher makes decisions about the research plan and justifies those decisions. According to Glasofer (2014), “quality is the extent to which a study has minimized biases in the selection of subjects and measurement of outcomes, as well as minimized influence of anything outside of the factors being studied on the results” (p. 19). If the researcher has done a good job with the justifications, then the strength of the results is supported. When poor justifications for the research decisions are evident, the strength of the results must be questioned. As a result of this realization, scrutiny focusing on the limitations and strengths of studies is now commonplace. This shift from criticism to analysis provides a more positive approach to examining the usefulness of the scientific data generated. Nurses must critically contemplate and evaluate studies, particularly research studies, to determine the appropriate application to practice. Melnyk and Fineout-Overholt (2015) support this sentiment in relation to research and evidence-based practice (EBP). In EBP, research provides the evidence that guides clinical practice in making decisions about the care nurses provide.

According to Polit and Beck (2008), a research critique is a mechanism to provide feedback for improvement. They suggest that nurses who can critically review a study make valuable contributions to the body of nursing knowledge. Individuals conducting critiques need to be aware of biases that they could insert into their review. Care needs to be given



THINK OUTSIDE THE BOX

Looking critically at the evidence required of nurses today, how could you start the process of gaining confidence in doing research critiques? What are some of the reasons for doing research critiques?

when looking at sources to determine the effectiveness of the material for practice, so that changes in practice are based on material that has minimal biases within the review of the material.

Finally, considering a rationale for a research critique can be found in the definition of the word “critique” as offered by the Merriam-Webster (2015) *Learner’s Dictionary*: “a careful judgment in which you give your opinion about the good and bad parts of something (such as a piece of writing or a work of art)” (p. 1). If one thinks of nursing as both an art and a science, then a critical review of nursing research can be seen as a work of art. Studies withstanding the test of time through careful exploration of findings and implementation allow nurses to practice the art and science of the profession. Each nurse is asked to regularly and consistently examine how and what they are doing in light of the evidence to ensure that the care provided is current. By examining the different articles for positive and negative items within the discussion, gaps and consistencies can be determined. Research is a significant aspect of EBP; therefore, this chapter discusses the research critique first.

■ Elements of a Research Critique

Before considering the elements of a research critique, let’s discuss the types of critiques. Burns and Grove (2009) have identified nine types of critiques, ranging from student critiques to critiques of research proposals:

- Students learn to critique in their nursing education programs.
- Practicing nurses analyze studies for evidence on which to base the care provided.
- Educators approach critiques from the aspect of improving instruction.
- Nurse researchers focus on building a program of research emphasizing the review of studies in one specific area.
- Abstracts are frequently reviewed for use in presenting research findings.
- Presenting research at meetings, conferences, and workshops allows participants to verbally critique studies.
- Several nursing journals publish critiques of published articles, with the authors of the original article subsequently responding to concerns raised with the critique. These types of critiques often take the form of letters to the editor.
- An article submitted for publication in a peer-reviewed journal undergoes a review by peers who assess the quality of the study.
- Requests for funding for research studies from agencies such as the National Institute of Nursing Research (NINR) are subjected to scrutiny.

Critiques are essential to EBP and are expressed in the various forms just discussed. Regardless of the type of critique, each critique includes certain elements. Brink and Wood (2001) have suggested that the rationale for a research critique is to ascertain whether the conclusions are serviceable within the setting in which you are functioning. Some general questions can be associated with the elements of a critique.

Study Purpose

The first element of a research critique generally involves determining the purpose of a study. For example, this material is found in the introduction of the study by Iverson and colleagues (2014), although it is not labeled as such. Questions to be asked about this element include the following:

- Is the purpose understandable?
- Is it appropriate to your practice?
- Is a need for the study clearly stated?
- Will the study improve nursing practice and add to the body of nursing knowledge?

In the Hanna, Weaver, Slaven, Fortenberry, and DiMeglio (2014) article, these questions would be assessed by reading the untitled introduction along with the correlation of diabetes-related quality of life section. Answers to these questions guide the critique. If the responses are negative, then the notion of applying the study to practice is questionable. The purpose section should clearly and effectively present the importance of the need to complete this study on this topic. When the goal of the study is not evident with the initial information, the article may be overlooked as not connected to the material being sought. This determination is based on that key, preliminary clarification of the “why” statement. The reasons for the study must be unmistakably declared within the first few paragraphs of the article.

Research Design

A second element involves the design of the research. In the Iverson and colleagues (2014) manuscript, this material is found in the section labeled as methods, particularly the data collection component. Questions to ask about this element include the following:

- Is there a framework/theory to guide the study?
- If there is no framework/theory, are you able to identify how data will be evaluated?
- Do the authors provide a clear discussion of how data will be collected and maintained?

- Who will be studied?
- What is the plan for conducting the study?
- Are the research plan decisions adequately justified?

In the Hanna and colleagues (2014) manuscript, these questions would be assessed by reading the conceptual framework along with the methods in the design section. Each question provides a nuance related to the different components of a study.

Constructing the different components for a research study with the rationales for the decisions made along with the generating of the research project is a multifaceted and intricate enterprise. Adequate planning is important to allow the use of the best evidence for incorporation in nursing practice. A well-thought-out design allows for assurance that the evidence has practicality. The research design can be likened to a set of instructions allowing the builder to put together the pieces of a puzzle resulting in a usable product. The determination of the rationales as to how and why decisions within the research process were made is imperative to the successful development of a sound and reasonable research application. The justification for the decisions made provides the foundation for users of the research to determine the reasonableness of the results and outcomes recommended.

Literature Review

Another element to consider is whether the literature review focuses on the problem presented. The literature review should speak to the gaps and inconsistencies found within the evidence. This material is found laced throughout the Iverson and colleagues (2014) manuscript. A resourceful and constructive literature review provides clarity as to what has been done and what continues to be needed.

Questions to ask about this element include the following:

- Is the literature review thorough and detailed?
- Is the literature review current—that is, has the literature been published within the last 5 years?
- Are there benchmark publications?
- Are the majority of sources primary or secondary?
- Is the literature review well organized, including an introduction and a summary?
- Does the literature review include a section for a model/theory?



THINK OUTSIDE THE BOX

Which aspects of a research article do you perceive as important, and why?
Which aspects of the article seem to be the hardest to locate, and why?

These questions would be assessed in multiple areas within the Hanna and colleagues (2014) manuscript. Care should be given to the clarity of the literature discussion when the different aspects are laced throughout the discussion.

A thorough literature review allows for assessment of the credibility of the present study. Of major importance in beginning a research study is the need to ask, “What has been written about the problem?” The literature review provides the foundation for the study’s significance and relationship to practice. Benchmark publications are valuable because they serve as the foundation for the ongoing investigation on the topic of interest. Publications that have been deemed as underpinning and supporting of the ongoing work are paramount to successful progression to the next level of knowledge concerning a topic of interest.

Research Question/Hypothesis

The next element of a research critique is the research question(s) or **hypothesis(es)**. This element of the critique is of extreme importance, as it should reflect the purpose of the study. Within the Iverson and colleagues (2014) manuscript, this material is denoted as the purpose statement that comes at the end of the introduction. Research questions in EBP are the “who, what, when, where, why, and how” guiding the nursing care provided to patients. Thus, it is essential to assess the following issues:

- Is the research question clearly stated?
- Does it match the purpose of the study?
- Are the decisions made about the research question adequately justified?
- Is there a theory/framework/model discussed that establishes a relationship with the question?

In the Hanna and colleagues (2014) manuscript, these questions would be assessed by noting the purpose statement provided at the end of the introduction section.

A study can contain a hypothesis rather than a research question. In some studies, the research purpose may be the only statement provided. Whether it is a research purpose, research question, and/or hypothesis, it is important that the connection to the study purpose is evident. The expectation that the study purpose is evident in all aspects of the development of the study is crucial. Polit and Beck (2008) define a hypothesis as “a prediction about the relationship between two or more variables” (p. 755). Simply put, a hypothesis may predict, propose, suppose, explain, or test a quality, property, or characteristic of people, things, or settings. People often talk about or

discuss “hypothetical situations.” A hypothesis proposes a solution. Questions to ask about a hypothesis and/or research questions include the following:

- Are the independent and dependent variables described?
- Is the hypothesis clearly stated?
- Does the hypothesis reflect the purpose of the study?
- Are the decisions made regarding the hypothesis adequately justified?
- Is there a theory/framework/model discussed that establishes a relationship with the hypothesis?

The establishment of the research question or hypothesis is paramount to the focus of the study. Each aspect of the wording within the questions or hypotheses needs to be clear and concise to allow for the effective concentration of the research endeavor. The PICOT (population, intervention, comparison, outcome, time) statement should play a part toward the development of the research question or hypothesis. The PICOT process drives the literature review and can evolve into the research question or hypothesis, based on the outcomes of the literature review. From the gaps and inconsistencies identified during the literature review within the EBP process, the research question/hypothesis can be structured to advance toward the next level the body of knowledge concerning the topic under investigation.

Study Sample

Another element of the research critique focuses on the sample. Sampling questions address the different aspects of the population. Within the Iverson and colleagues (2014) manuscript, the section to read and consider is labeled “Setting and recruitment.” Each aspect within the clarification of the sampling design should be supported by rationales within the dissemination of the study. Questions regarding the sample should include the following:

- Who is identified as the target population?
- How were the subjects chosen (e.g., randomly, conveniently)?
- Who is included (e.g., males, females, children, adults)?
- Who is excluded (e.g., elderly, pregnant women, minorities)?
- How large is the sample?
- Are the decisions made regarding the sampling plan adequately justified?
- Were ethical considerations clearly addressed within the sampling process?

In the Hanna and colleagues (2014) manuscript, these questions are located in the area entitled “Sampling Procedure.” Answers to these

questions can help the nurse decide if decisions about patients and clinical problems are practical for their unique setting. By looking at these aspects of the sampling plan, generalization to a population can be supported. Clarification of the sample population must be denoted. Each aspect of the sampling process should be carefully and thoroughly described within the discussion of the project.

Data Collection

Data collection embraces many aspects that are critical to the success of the research study. Essential to the critique is a description of how the data were collected. Within the Iverson and colleagues (2014) manuscript, this material is found in the section labeled “Data Collection Component.” Questions about this element include the following:

- What steps were taken to collect the data?
- How often were data collected and for how long?
- Which instruments or tools were used?
- Who designed the tools?
- Are the tools valid and reliable?
- Are the tools adequately described so that readers can understand what the scores mean?
- Were data analysis procedures appropriate?
- Are the plans for data collection and analysis decisions adequately justified?
- Were ethical considerations adequately addressed within the data collection process?

In the Hanna and colleagues (2014) manuscript, these questions would be assessed by reading the data collection section. Justification for the data collection processes should be evident within the discussion of the data.

Data collection gives information about the research question or hypothesis. Quantitative data, for example, are often collected by a survey mechanism that provides a score for analysis. In such a case, a clear understanding of how and where the data were collected, the description of the instrument (tool) that was used, and how the results were statistically analyzed are essential. In contrast, the data collected for a qualitative study are presented in narrative format. Qualitative data utilize collection methods that must include a discussion of how potential biases were addressed.

Study Results

Clear discussion of the results from a study is essential. Results must be placed within the context of where and when they were collected. Within the Iverson and colleagues (2014) manuscript, this material is found in the



THINK OUTSIDE THE BOX

Frequently, the theoretical foundation for a study seems to be omitted in research articles due to page restrictions imposed by the journal. Debate the importance of including the theoretical foundation for a study in the report of its findings.

two sections labeled as data analysis and results. A critique should provide the results of the study. Questions about results include the following:

- Is the research question answered or the hypothesis supported?
- Were limitations listed and explained?
- Can generalizations to a wider population be made?
- Did the results support what was reported in the literature?
- Were there any unexpected findings?
- Did the outcomes affirm the theory used as the basis of the study?

In the Hanna and colleagues (2014) manuscript, these questions would be assessed by reading measures, covariates, data analyses, and results.

The elements of the critique summarize the study, including what was found and how the findings might be applied to similar situations. The summary of the findings needs to be carefully presented to allow for generalization to other settings and populations. Care must be given to this aspect within the report of the study outcomes to provide an understanding for where and how the results can be used within the practical world of health care.

Study Recommendations

The final element of the research critique is the section presenting the author's recommendations. The author understands what the study means and has the responsibility for providing guidance as to where the next steps should be directed. In the Iverson and colleagues (2014) manuscript, this material is found in the discussion section. With the in-depth work pivotal to the study completion, avenues that were identified but not addressed and/or unexpected outcomes are key areas that should be recommended for further study. Questions for this element include the following:

- Are suggestions for further use in practice included?
- Is there an identified need for further research?
- Could you make a change in your practice based on the results of this study?
- What are the benefits to using the information learned?

In the Hanna and colleagues (2014) manuscript, these questions would also be assessed by reading the discussion section.

The necessary elements of a research critique can be organized as answers to a series of questions. Utilizing a logical format for reporting the decisions made as the study was planned, along with the results that were obtained, provides a foundation for moving healthcare research forward. This process of carefully and thoroughly considering all aspects within a reported study demonstrates accountability for advancing health care and patient safety. Those questions then form the basis for the process of conducting a research critique. As the individual investigates the quality of a study, these questions can provide a beginning place for the critique. A validated study should successfully address the majority of these questions in a positive and constructive manner. The purpose of reporting the results of a study is to allow colleagues to carefully assess the outcomes to identify ways to improve patient care.

■ Process for Conducting a Research Critique

The word **critique** can be defined as “an article or essay criticizing a literary or other work; detailed evaluation; review, a criticism or critical comment on some problem, subject, etc., the art or practice of criticism to review or analyze critically” (Dictionary.com, 2015). Although *research critique* is the term frequently used, several other terms—such as *critical analysis*, *review*, *evaluation*, and *appraisal*—can also be associated with the process. Any of these terms could be, and are, used as the method for assessing a published research article.

To gain a true understanding and appreciation of the process of a research critique, one must recognize the expectations for conducting the process. As the definition implies, it is undertaken to allow individuals to carefully and thoroughly examine a research endeavor. The outcome is not anticipated to be a negative grilling of the project to identify all of its shortcomings. Wood and Ross-Kerr (2006) affirm this point: “In your best judgment, you decide if what you have read will serve your purpose” (p. 65). The materials should be practical and applicable to your individual practice setting and the patient situation.

Studies should be scrutinized for their merits, limitations, implications, and consequences. Each and every report should be assessed with a critical eye toward each unique setting. The resulting critique should be impartial, presenting both strengths and challenges. Any review should have a goal of providing constructive recommendations related to how the study might be improved, along with where the results/outcomes could be used within health care. It is envisioned as a review or analysis of the research undertaking. Both the strengths and challenges within the process of conducting the research study are judiciously



THINK OUTSIDE THE BOX

If nurses do not value research, their engagement with the critique process and their participation in research studies are decreased. Identify steps and incentives that might be used to get you and your peers involved in doing research critiques or research projects.

examined to verify that the ending results can truly be generalized to the target population.

By completing an effective research critique, a reviewer becomes aware of both the strengths and the shortcomings of the research project. As a consequence of identifying these concerns, the assessor can efficiently incorporate the results into practice based on this in-depth knowledge of the study findings. Thus, the incorporation of the results into nursing practice is based on an understanding of the comprehensiveness of the study.

Every study has limitations, because researchers must inevitably make multiple methodological judgments that influence the significance, integrity, and value of the resulting research outcomes (San Jose State University, 2005). No study in humans is ever perfectly conducted, and even nonhuman studies frequently have limitations and weaknesses. It is true that research conducted on laboratory animals can be controlled with greater success than projects in which humans are the subjects. Put simply, when working with laboratory animals, the variables can be manipulated. If the same project were envisioned using human subjects, however, the ethical ramifications could be increased, because manipulation of the variables for human subjects might result in damages. Thus, the ethical nuances of human research must be considered when the results are proposed to be incorporated into practice.

Another factor—the austere style of journal articles—also triggers some concerns. The amount of space allocated to articles within journals is prescribed by the companies that publish those journals. As a result of these restrictions regarding page length and word count limits, key elements within the research process must be succinctly presented. Depth of discussion about the basic research principles must, therefore, be limited or even omitted. Unfortunately, discussions of the operational



THINK OUTSIDE THE BOX

Look at some research articles. Can you identify within them any discussion related to patient preferences that is part of evidence-based practice? Discuss your thoughts about your findings.

definitions for key variables; models, plans, and systems; and conceptual or theoretical frameworks are often omitted due to space restrictions. Classic research studies include a description of the theory/framework and concepts underlying the study, but many other studies use a model, plan, or system for the research.

Another aspect of the process that deters nurses from participating in research critiques is the unfamiliar jargon. Statistical aspects are quite intimidating to many practicing nurses. The definitions used within research to discuss sampling, variables, hypotheses, and quantitative and qualitative methods are typically foreign to the practicing nurse. Although many of these are common terms, such as “independent,” “dependent,” “convenience,” and “variable,” they take on new meanings within a research project. This specificity of the terms within research leads to conflict and misunderstanding for novice evaluators of research. In the future, nurses will be increasingly confronted with the expectation that they will center their practice on evidence. Nurses must become proficient at reading and understanding research reports to incorporate their findings into EBP. They need to take a deep breath now and plunge into the critiquing process.

The most valuable advice for developing expertise in this process is to continue doing research critiques, because practice does diminish the confusion and overwhelming nature of the process. By reading research articles, nurses become increasingly accustomed to the format and terminology. Evidence-based nursing practice mandates that nurses begin to build a knowledge base by the “steady diet” approach—specifically, by digesting at least one research report each week. By accepting the challenge to become comfortable with research reports, nurses will find that the different aspects of the report become more familiar, even commonplace—and, therefore, less threatening. Not all nurses will strive to carry out research activities, but it is imperative that all nurses become comfortable with the use of research results to advance the discipline of nursing and ultimately improve nursing care.

Initially, some general areas of the research study must be considered. The author(s) of the study needs to be evaluated. Precisely who is completing the research, including those persons’ job titles and qualifications to conduct the project, needs to be carefully contemplated. After the author information is pondered, an assessment of the study title provides valuable information. The title of the project should provide a clear, concise description of the project. It should stimulate a prompt perception of the fundamental nature of the paper.

At this point, the abstract is examined to further clarify the focus for the research endeavor. The abstract should condense the main points from the research project. A quick read of the abstract and discussion sections should provide valuable insight into the complexity of the study and its applicability to a unique practice setting.

Four key aspects to carefully address when initiating a research critique are:

- Recognizing the purpose and problem, while resolving if the design and methodology are consistent with the study intent
- Verifying that the methodology is utilized appropriately
- Contemplating if the outcomes and conclusions are credible and confirmed by the findings
- Reflecting on the report's overall quality, strengths, and challenges, and whether they contribute to the knowledge base and offer suggestions for improvement

Research critiques can take many different pathways. The principal idea is to make sure that, regardless of the tool or process used, each aspect of the research process is carefully examined for appropriateness. An example of the research critique process should involve the following steps:

1. Read the entire study carefully and with purpose.
2. Examine the organization and presentation of the different components for logical flow.
3. Identify any term you don't understand by seeking clarification as to the meaning of the term.
4. Highlight and examine each step of the research process.
5. Identify the strengths and challenges without bias.
6. Consider modifications for future studies.
7. Determine how well the study followed the expectations for an ideal study.

Table 14-1 provides an example of a critique worksheet. Some worksheets provide areas for comments while others may have checkboxes to complete. Any format that addresses the different areas that need to be included in a critique can be used to help the individual develop confidence in completing a review of a scholarly article.

These guidelines are fairly general, but they do provide a place to start. A careful, general reading of the entire study must be the beginning point for any critique. The examiner initially should read the complete research report to gain an awareness of the study and its contribution to knowledge improvement. A second reading of the document allows the focus to be directed toward the questions appropriate to each stage of the critiquing process. The use of a photocopy of the article may facilitate the research critique process, because areas can be highlighted, questions can be added to the margin, and key points can be circled. For individuals just beginning the process of critiquing articles, the use of note-taking and comment-making in the margin allows for the questions to be directed to the correct place within the article.

Table 14-1

| Critique Worksheet | Comments Concerning Completeness of the Information Provided |
|---|--|
| Areas for Consideration | |
| Title of the study | |
| Author credentials | |
| Purpose of the study | |
| Timeliness of literature used | |
| Literature review addressed each of the variables | |
| Theory/framework, concepts, and the relationship to nursing | |
| Research question or hypothesis | |
| Dependent and independent variables listed | |
| Definitions given | |
| Tools and their reliability and validity information (quantitative) | |
| Data collection methods and triangulation of process (qualitative) | |
| Sample description | |
| Study ethics description (i.e., institutional review board [IRB] information) | |
| Data collection procedures | |
| Data analysis | |
| Results, recommendations, and implications for practice | |

As the reader begins this initial review of the research project, he or she will develop a feel for the organization of the article, along with the manner of presentation for the entire research process. At this point, the examiner will become aware of the complexity of the identified material. To become somewhat relaxed with the content, he or she should expect to read the article several times. Each time the article is read, the examiner comes to terms with a different aspect of the article. Frequently, an initial question relates to the researcher's ability to verbalize the process in a manner that nurses can understand and be able to utilize in practice. The reader may also find that some of the initial questions raised in the introductory section are answered in other sections within the article. After this general overview of the article, a more critical examination of the document can then be completed.

Each aspect within a research article is examined to identify areas of concerns and assets (**Table 14-2**). The evaluator will benefit from taking the time to highlight each of the steps of the research process, spotlighting the hypothesis(es), literature review, sample, ethical considerations, and research design. During this focused examination, any limitations

Table 14-2

| Rules for an Ideal Study | |
|-----------------------------------|--|
| Areas for Consideration | Comments Concerning Completeness of the Information Provided |
| Research problem | <ul style="list-style-type: none"> • Significance of problem noted • Clarification of aim of study • Practicality of study • Clarity, significance, and documentation |
| Review of literature | <ul style="list-style-type: none"> • Organization of literature • Progression toward study question through previous research reports • Rationale and direction for the study presented |
| Study conceptual framework/theory | <ul style="list-style-type: none"> • Clear link between conceptual framework/theory and research question/purpose • Any maps/models logically presented |
| Research questions or hypotheses | <ul style="list-style-type: none"> • Expressed appropriately and clearly • Logically related to the research purpose/aim and framework/theory |
| Variables | <ul style="list-style-type: none"> • Concepts identified within the framework/theory used • Variables operationally defined • Conceptual definition consistent with operational definition of each variable |
| Research design | <ul style="list-style-type: none"> • Design appears appropriate • Clearly defined protocol for conducting research project • Any treatment closely scrutinized to guarantee consistency • Threats to internal validity minimized • Logically connected to the sampling method and statistics used |
| Sampling method | <ul style="list-style-type: none"> • Method appropriate to result in representative sample • Biases identified • Human rights protected • Setting described and appropriate for target population |
| Measurements | <ul style="list-style-type: none"> • Instruments sufficient for measuring the study variables • Instrument validity and reliability levels • Instrument scoring techniques clearly described |
| Data collection | <ul style="list-style-type: none"> • techniques for using observation clearly described • Methods for recording measures clearly described • Interrater reliability described when appropriate • Process clearly, consistently, and ethically described |
| Data analysis | <ul style="list-style-type: none"> • Procedures suitable for the type of data collected • Analysis procedures clearly portrayed • Outcomes offered in a comprehensible way |

Source: Data from San Jose State University. (2005). Reading and critiquing research. Retrieved from http://www.sjsu.edu/upload/course/course_969/Reading_and_CritiquingResearch.ppt

identified by the researchers should be noted. Another area to recognize explicitly is the operational definitions, which reflect the standards used within the research project to clarify the specific variables. After noting the operational definition for each variable, a reviewer should not have

many additional terms that require explanation. The evaluator should define any term that continues to be unfamiliar to enable him or her to better understand the entire process. Every reader should develop a habit of looking up unfamiliar terms instead of skipping over them, which simply causes those terms to remain unfamiliar. The objective of critiquing any research report is to become familiar with the language and procedures used regularly within the scheme.

At this point in the research critique, the reviewer attempts to identify the strengths and limitations of the research process described in the report. The reviewer should be aware that the limitations so identified might actually be a consequence of the lack of space allowed within the documentation of the research endeavor rather than representing the intended omission of the aspect. All journal articles have space limitations, which can result in some items being cut because of space considerations rather than because they were lacking in the study.

One major challenge for novice research readers is the evaluation of statistics. In considering this aspect of any research process, the key point is to ask for help. To better understand the material presented in articles, it could be suggested that reviewers either find someone to provide help in this area or obtain an introductory book to statistics to aid in the assessment of the statistical data. Nurses who practice evidence-based nursing are not expected to become statisticians. Nurses are, however, expected to acknowledge their limitations and seek help from statisticians and others as needed to improve their evaluation of research results for incorporation into everyday nursing practice.

One means of utilizing the expertise of peers and colleagues is through establishment of a journal club. The journal club members can select a different article on a regular basis. The group then completes the review/critique. By using the group to complete the work, each participant grows in their own knowledge and confidence to be able to complete a review individually.

As nurses are asked to become involved with the critiquing of research articles for EBP, several formidable factors emerge and must be dealt with. Several Internet sites are available to use as resources for exploring the development of research critiques geared toward EBP.

Critically Assessing Knowledge for Clinical Decision Making

The various aspects of EBP are of fundamental importance in considering the assessment of knowledge related to clinical decision making. As nurses, the evidence required to steer a competent and effective

practice does not occur after reviewing a single independent study. Changes within best practices are based upon a sound foundation of evidence, not just the results from a single study. Gray, Bliss, and Klem (2015) provide an example of a level of evidence ranking system along with a taxonomy for strength of recommendation for treatment (SORT) statement. While the level of evidence ranking mirrors most other ranking tools, the SORT statement provides clear guidance on how to use the level of evidence ranking to determine the level of recommendation. Within this discussion, the idea moves from the strength of the evidence to the level of recommendation related to implementing the results into day-to-day practice. The practicing nurse comes to the research critique process with a foundation of clinical experience. Thus, the critique of the research endeavor is tempered by this clinical expertise. Yoder (2005) suggests, “clinical decisions require that one use a problem-solving approach to clinical practice that integrates a systematic search for and critical appraisal of the relevant evidence to answer the clinical questions” (p. 91). Every nurse has been taught a problem-solving methodology. During the review of research, it becomes essential for nurses to utilize this critical thinking framework, which has already been incorporated into practice, to validate and conceptualize the research critique process. The idea behind a research critique is to provide a systematic process for critically appraising research projects. Within this process, nurses must become comfortable with looking at all aspects of the various studies to assess any strengths and limitations that might be apparent. Carefully considering these different aspects of the report facilitates critical thinking concerning the results reported and the applicability of those results to the workplace.

One aspect of paramount importance to be considered within any research critique is the determination of the sampling process. According to Pajares (2007), “The key word in sampling is representative” (Section VI.E.4). Determining the appropriateness of the sampling method is critical in any study appraisal. Whatever sampling method is used, the rationale and limitations related to this methodology must be meticulously discussed. While all aspects of the research decision-making process are important, the inclusion of an effective sample (representative of the population) is critical.

Evaluating Quantitative Research Evidence

Quantitative research reports tend to be slightly easier to critique because of the concreteness of the quantitative research design. The various aspects of quantitative research reports document the expectations for all of the various elements of the article—that is, the introduction, literature review, hypothesis(es), sampling, research design, statistical testing, and discussion.

Although each of these areas includes considerable levels and components, the clarity of the descriptions of these aspects is more distinct than in qualitative methodologies.

According to Carter (2006), the critiquing of quantitative research reports should address four basic areas: comprehension, comparison, analysis, and evaluation. Each of these four levels of review adds a different dimension to the resulting scrutiny. Comprehension and comparison provide the overall appraisal of the report. Analysis then takes the investigation of the report to the level of reflecting on the continuity among the different parts (Carter, 2006). At this point of assessing the report, the principal concern is whether the hypothesis flows into decisions made about the sample, and whether that sample is appropriately managed by the research design. The final aspect of the review carefully considers the meaning and significance of the study process for implementation into nursing practice. The focus is to determine whether the findings, implications, and recommendations presented in the study report are truly supported and presented.

A key aspect of this review process unique to the quantitative research appraisal is the use of a conceptual or theoretical framework (Pajares, 2007). Although it can be provided in any of the research methodologies, this framework is essential in all quantitative research endeavors. Having said this, within printed articles documenting quantitative research, the discussion of the conceptual/theoretical framework is frequently omitted to satisfy the journal's page length requirements. Of course, the omission could also reflect the researcher's failure to include a conceptual/theoretical framework as part of the study design. The total omission of this framework would be a marked limitation within a quantitative research methodology. When a lack of theoretical foundation for a study is determined (yet the study outcomes appear to be applicable to your setting), sending a query to the authors about the issue may be helpful to determine the status of the theoretical foundation.

Evaluating Qualitative Research Evidence

When evaluating **qualitative research** efforts, the examination of the entire process assumes a slightly different perspective from that employed with a quantitative research undertaking. Assessment of the clarity of the purpose and statement of the phenomenon remains consistent with that of any other methodology critique. These components must be presented up front. From that point onward, the specificity of the qualitative design must be considered. Broad research questions, instead of hypotheses, are employed within this type of research design. The literature review may follow the data collection process rather than driving the research attempt from its inception. A framework may or may not be clearly presented as part of the study

report. Qualitative research reviews must carefully discuss the researcher–participant relationship, because this aspect is a critical component of the data collection process. Ethical considerations also play significant roles in determining the appropriateness of this methodology.

Carter (2006) has detailed five standards to keep in mind when conducting a qualitative research critique. First, the research report must present a comprehensible depiction of the research environment, data collection process, sampling process, and the researcher’s thought process. A second standard relates to the importance of congruence among the methodological aspects. According to Carter (2006), this section should indicate “rigor in documentation, procedural rigor, ethical rigor, and auditability” (Critique of qualitative research, 2). The third standard is the analytical preciseness: The researcher’s thoughts and decisions related to the data should be evident in the report. The fourth standard stresses the importance of addressing the theoretical connectedness presented within the report. The fifth standard identified suggests that the relevance (value of the study) needs to be apparent within the documentation of the research project. Appropriate examination of each of these facets within a research report should yield a strong, valid depiction of the research project.

The data collection aspect of the study is a crucial component of the presentation of qualitative research projects. The reader must be walked through the entire process, from identification of the participants to the management of the data collected from them. The congruence of these data with the research purpose, question, and tradition needs to be assessed. The researcher is obliged to discuss how the field engagements and observations ought to build trust and ensure validity of the data collected. Another aspect that should be identifiable within the report is the ongoing and concurrent nature of data collection and analysis. Because data collection and analysis occur in tandem in qualitative research, the codes used as categories and the process utilized to determine data saturation must be explicitly discussed in the report. The research report should also address triangulation, peer review of the research process, articulation of researcher biases, member checking, and external audit by expert consultants.

A final aspect that must be noted within qualitative research reports is the sampling data. Because the sample population in such studies is usually small and focused, a description of this population is critical to allowing the reader to determine if the study findings are generalizable to other populations.

Qualitative research often employs additional terminology that must be defined and clarified, which can cause further confusion and frustration. As a result, the critique of qualitative research tends to be an area that is best entered into after learning how to conduct critiques of quantitative research. Put simply, qualitative research tends to be less structured than quantitative research.

Evaluating Mixed Methods Evidence

Mixed methods research embraces both quantitative and qualitative design aspects. According to Creswell (2003), the mixed methods approach takes advantage of the strengths of both quantitative and qualitative research by employing sequential, concurrent, and transformative strategies of inquiry. As a critique of a mixed methods research study is undertaken, the reader must, therefore, consider the presentation of both methodologies within the discussion. A unique aspect of a mixed methods research critique is the expectation of a stated rationale for the use of this method.

The quantitative and qualitative data in a mixed methods research report are frequently presented separately, which allows the reader to concentrate on one type of data prior to considering the other type. Within mixed methods research, one type of research design usually drives the second research design process. The reporting of the data and results must reflect this research progression of data collection. The discussion section should integrate the two types of data, thereby strengthening the study's findings. When a transformative study design is employed, this section should address the advancement of the agenda for change or reform that has developed as a result of the research.

■ Employing EBP Guidelines: Instruments for Holistic Practice

EBP requires that multiple related articles be correlated to provide a sum of evidence rather than a single data set. Contradictory evidence must be reconciled through the evaluation and association of data from multiple quality research projects. Of course, this process of reconciling contradictory evidence and multiple research discussions generates additional questions that need to be investigated at some point in time. According to the Oncology Nursing Society (2005), the EBP process comprises six steps:

1. Identify the problem.
2. Find the evidence.
3. Critique the merit, feasibility, and utility of the evidence.



THINK OUTSIDE THE BOX

Can you think of any data other than research that can be used as evidence for nursing practice? Identify data that nurses provide in their practice.

4. Summarize the evidence.
5. Apply the ideas to practice.
6. Evaluate the results.

Each of these steps, with the exception of the application to practice (Step 5), can be visualized within the research critique process. Research critiques require the identification of the problem; an examination of the literature review; a critique of the merits, feasibility, and use of the research process; summarization of the research process; consideration of the applicability of the research results to practice; and evaluation of the results.

■ The Evidence-Based Appraisal

Evidence comes from many different sources. The first part of this chapter examined the research critique process, which is part of EBP. Now let's examine other important elements for nurses to use in their nursing practice. According to Vincent, Hastings-Tolsma, Gephart, and Alfonzo (2015), "many clinical decisions are undergirded by value judgments, tradition or habits, and a mixture of evidence from a variety of sources that may or may not include robust research" (p. 48). By including evidence-based appraisals, the inconsistencies identified by the challenge of assessing evidence can be managed in an increasingly positive and beneficial manner. Asserting the strength of each component of evidence used to support a healthcare practice should be a penetrating and significant expectation from each healthcare discipline. By carefully and thoroughly considering the biases and implications from research projects, quality improvement activities, and EBP investigations, the optimal health care can be determined and implemented. Melnyk, Gallagher-Ford, Long, and Fineout-Overholt (2014) employ three categories as strategies for integrating EBP competencies into health practices. The three categories are: "1. Promote a culture and context or environment that supports EBP, 2. Establish EBP performance expectations for all nurse leaders and clinicians, and 3. Sustain EBP activities and culture" (p. 13). As an assessment is done on EBP projects, these three categories should be considered and supported. As the health community becomes increasingly comfortable with EBP integration, the health practices provided will further move toward being based on the best evidence available.

Expert Opinion

When no definitive data are available, nurses often turn to experts with knowledge needed about a specific aspect of nursing care. A body of thought exists that implies that expert opinion is not valuable. However,

when no valid answers or data are available, expert opinion is considered a viable alternative. Expert opinion may be expressed in books, conferences, forums, reports, or even from expert clinicians in practice. Most often, textbooks and expert clinicians are the only valid resources when scientific data are not readily obtained.

Hopp and Rittenmeyer (2012) suggest the use of the term *local data*. This type of data may be internal to an organization such as patient/employee satisfaction surveys, audits, or employee performance evaluations. Of particular interest to local data is quality improvement (QI)/quality assurance (QA). Hospitals and clinics, accredited by the Joint Commission and other accreditation agencies, compile QI/QA data. These data are often reported to national agencies, which allows for comparisons of how a local hospital clinic is doing compared to other agencies of like size and function. For example, the Agency for Healthcare Research and Quality (AHRQ) looks at access to care, costs, and patient outcomes. The Area Health Resource Files (AHRF) examine data specific to a county. The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) is a national survey of patients about the quality of hospital care they receive (Mason, Leavitt, & Chaffee, 2012). The Joint Commission is particularly interested in sentinel events. Sentinel events may be medication errors, wrong-site surgery, suicide, operative and postoperative complications, or even nurse staffing issues (Sorbello, 2008). Sentinel events require healthcare organizations to conduct a root cause analysis, which is a structured process to examine why an adverse event occurred. A plan is then developed to ensure that the event does not occur again.

Each of the items discussed in this section demonstrates a variety of ways to obtain data that may not be the result of scientific research. The evidence-based appraisal is necessary to provide nurses with knowledge to improve their nursing practice through expert opinion and internal data. The evidence-based appraisal is an important aspect in the daily practice of nurses, whether it applies to patient/nurse satisfaction, cost, or patient safety.

Summary Points

1. Critiques of research are essential to EBP and allow nurses to practice the art and science of the profession.
2. There are nine types of critiques.
3. The necessary elements in a research critique can be compiled in a series of questions for the process of critiquing research.
4. Critiques should be balanced, identifying both strengths and limitations in the study report examined.

5. Journal articles have restrictions on page limits and word limits, which sometimes result in information being omitted.
6. Jargon in research reports often deters nurses from doing research critiques.
7. The critical appraisal of research is a skill to be developed through repeated practice.
8. General areas of the research study include author qualifications, study purpose, study design, sample, research methodology, outcomes, limitations and strengths of the research, and recommendations.
9. Nurses in EBP do not need to be statisticians, but they do need to be comfortable asking for help when evaluating the statistical analysis portion of a research report.
10. Quantitative research studies are concrete in nature and should include a theoretical framework.
11. Qualitative research studies contain broad research questions and are unstructured.
12. Mixed methods research embraces both quantitative and qualitative aspects of study design.
13. Research critiques should consider the applicability of the research results to practice.
14. Evidence-based appraisals may include evidence from sources other than research.



RED FLAGS

- A critique is not a negative process, but rather should entail a careful examination of all aspects of the research process.
- A research critique should identify gaps within the study's research process.
- Future research possibilities should be identified as part of the original study and the critique of that study.
- Recommendations for advancement of the nursing profession should be documented in transformative research.
- For EBP, multiple related articles need to provide a sum of evidence rather than a single data set.
- Evidence-based appraisals are critical to patient safety and quality of patient care.

Multiple-Choice Questions

1. Nurses must critically assess research studies to:
 - A. Understand that all research is scientifically sound.
 - B. Determine the applicability of their findings to practice.
 - C. Know that all studies are perfect.
 - D. Identify a negative approach to research utilization.
2. Of the nine types of critiques, which of the following are considered essential to EBP?
 - A. Student, practicing nurse, and peer review critiques
 - B. Abstracts, presentations, and email critiques
 - C. Program of research, letters to the editors, and lay-journal critiques
 - D. National Institute of Nursing Research, educator groups, and newspaper critiques
3. The purpose of a study applies to EBP when it:
 - A. Adds to the body of nursing knowledge.
 - B. Is complete and requires multiple readings.
 - C. Is relevant to the authors.
 - D. Is hard to find in the literature.
4. A hypothesis may be described by which of the following terms?
 - A. Results, introduces, criticizes, reviews
 - B. Findings, improvements, collections, sets
 - C. Studies, plans, appreciates, concerns
 - D. Proposes, predicts, supposes, tests
5. An essential component of a critique is a description of how the data were collected. Which of the following statements provides the best data collection description?
 - A. Data collection was timely and used a tool developed by the researcher.
 - B. Multiple tools were used to collect the data.
 - C. The data was collected at 2-week intervals using a pre-test/post-test procedure.
 - D. The score for the tool is easily understood and needs little description.
6. Results of the study should include:
 - A. Unexpected findings.
 - B. Unanswered questions.
 - C. Pictures of subjects.
 - D. Endorsements of peers.

7. A research study recommendation should include:
 - A. No further need for research.
 - B. No benefits for use in practice.
 - C. Ways to change practice based on results.
 - D. Ways to avoid using the results in other studies.
8. What is the definition of a research critique understood to imply?
 - A. Analytical examination or commentary of a research report.
 - B. A negative assessment related to the weaknesses of a research report.
 - C. An analytical evaluation of the literature review.
 - D. A positive assessment of the research design.
9. Although many aspects are discussed within a research critique, the basic aspects that the critique is attempting to identify are:
 - A. Hypothesis(es) and literature review.
 - B. Strengths and limitations.
 - C. Research design and sampling methodology.
 - D. Shortcomings and critical problems.
10. Evidence-based nursing practice requires that nurses initiate a pattern to facilitate effective utilization of research results. The best method for improving a nurse's ability to incorporate research results into practice is:
 - A. Planning a monthly session to complete a literature review.
 - B. Completing a critique of a single research project.
 - C. Assessing at least one research report on a weekly basis.
 - D. Reviewing abstracts from selected research projects.
11. Several basic guidelines can be used to make the research critiquing procedure less threatening. Which of the following reflects the utilization of these guidelines?
 - A. The nurse reads the entire discussion section carefully to gain an overview of the research report.
 - B. The nurse identifies shortcomings that are unfamiliar to clarify the limitations within the study.
 - C. The nurse reads the entire study meticulously to acquire a general understanding of the research report.
 - D. The nurse identifies modifications for the selected research report.
12. Quantitative research design tends to be easier to critique due to the:
 - A. Length of the research reports.
 - B. Incorporation of triangulation into the process.
 - C. Use of convenient sampling methodology.
 - D. Concreteness of the research design.

- 13.** When attempting to critique a qualitative research endeavor, what must individuals be able to do?
- A. Easily identify the hypothesis(es).
 - B. Carefully assess the data collection and management processes.
 - C. Quickly determine the conceptual framework utilized.
 - D. Effectively understand the statistical results.
- 14.** One unique aspect present in reports of mixed methods research projects is a(an):
- A. Rationale for the utilization of the method.
 - B. Clear delineation of the sampling method.
 - C. In-depth discussion of the methodology.
 - D. Listing of the strengths and limitations.
- 15.** What do sentinel events require?
- A. The nurse to be fired.
 - B. The hospital to ignore it.
 - C. A root cause analysis.
 - D. The doctor to be present.

Discussion Questions

1. You and your peers, as staff nurses, have found a research article that has the potential to change the way you practice. List questions about the report elements that could guide your critique of the study.
2. Select an article on a research topic for your practice area and complete the critique worksheet in Table 14-1. After completing the critique of the article, give the article a “level of evidence” rating and a “strength of evidence” score. Would you change your practice based on the information in this article?
3. You are a manager on a medical–surgical acute care unit. Your facility is moving toward an EBP format. Each unit has been charged with establishing a process for involving the staff nurses in this transformation. You have decided to implement a journal club for staff nurses to review and critique research articles for potential inclusion in evidence-based policies. What would you set as the ground rules for the implementation of this journal club activity?
4. You are a circulating nurse when a patient is to have his left leg amputated, but the scrub nurse is preparing the right leg. You realize this could be a wrong-site surgical procedure. During your operating room orientation, you were given the hospital policy/procedure for making sure this does not occur. How would you proceed?

Suggested Readings

Daggett, L., Harbaugh, B. L., & Collum, L. A. (2005). A worksheet for critiquing quantitative nursing research. *Nurse Educator*, 30(6), 255–258.

Pellechia, G. L. (1999). Dissemination of research findings: Conference presentations and journal publications. *Topics in Geriatric Rehabilitation*, 14(3), 67–79.

Riley, J. (2002). Understanding research articles. *Tar Heel Nurse*, 64(3), 15.

Valente, S. (2003). Critical analysis of research papers. *Journal for Nurses in Staff Development*, 19(3), 130–142.

References

- Brink, P. J., & Wood, M. J. (2001). *Basic steps in planning nursing research: From question to proposal* (5th ed.). Sudbury, MA: Jones and Bartlett.
- Burns, N., & Grove, S. K. (2009). *The practice of nursing research: Appraisal, synthesis, and generation of evidence* (8th ed.). St. Louis, MO: Saunders Elsevier.
- Carter, K. (2006). *How to critique research*. Retrieved from http://www.runet.edu/~kcarter/Course_Info/nurs442/chapter12.htm
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage.
- Dictionary.com. (2015). Critique. Retrieved from <http://dictionary.reference.com/browse/critique>
- Glasofer, A. (2014). Searching with critical appraisal tools. *Nursing Critical Care*, 9(2), 18–22. doi:10.1087/01.CCN.0000444001.15811.a2
- Gray, M., Bliss, D., & Klem, M. L. (2015). Methods, levels of evidence, strength of recommendations for treatment statements for evidence-based practice cards: A new beginning. *Journal of Wound, Ostomy, and Continence Nursing*, 42(1), 16–18. doi:10.1097/WON.0000000000000104
- Hanna, K. M., Weaver, M. T., Slaven, J. E., Fortenberry, J. D., & DiMeglio, L. A. (2014). Diabetes-related quality of life and the demands and burdens of diabetes care among emerging adults with type 1 diabetes in the year after high school graduation. *Research in Nursing & Health*, 37, 399–408. doi:10.1002/nur.21620
- Hopp, L., & Rittenmeyer, L. (2012). *Introduction to evidence-based practice: A practical guide for nursing*. Philadelphia, PA: F. A. Davis.
- Iverson, K. M., Huang, K., Wells, Y. S., Wright, J. D, Gerber, M. R., & Wiltsey-Sterman, S. (2014). Women veterans' preferences for intimate partner violence screening and response procedures within the Veterans Health Administration. *Research in Nursing and Health*, 37, 302–311. doi:10.1002/nur.21602
- Mason, D. J., Leavitt, J. K., & Chaffee, M. W. (2012). *Policy & politics in nursing and health care* (6th ed.). St. Louis, MO: Elsevier Saunders.
- Melnyk, B. M., & Fineout-Overholt, E. (2015). *Evidence-based practice in nursing and health-care: A guide to best practice* (3th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- Melnyk, B. M., Gallagher-Ford, L. Long, L. E., & Fineout-Overholt, E. (2014). The establishment of evidence-based practice competencies for practicing registered nurses and advanced practice nurses in real-world clinical settings: Proficiencies to improve healthcare quality, reliability, patient outcomes, and costs. *Worldview on Evidence-Based Nursing*, 11(1), 5–15. doi:10.1111/WBN.12021
- Merriam-Webster. (2015). Critique. Retrieved from <http://www.learnersdictionary.com/search/critique>
- Oncology Nursing Society. (2005). *Evidence-based process*. Retrieved from <http://onsopcontent.ons.org/toolkits/evidence/Process/index.shtml>
- Pajares, F. (2007). The elements of a proposal. Retrieved from <http://www.des.emory.edu/mfp/proposal.html>
- Polit, D. F., & Beck, C. T. (2008). *Nursing research: Generating and assessing evidence for nursing practice* (8th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.

- San Jose State University. (2005). *Reading and critiquing research*. Retrieved from http://www.sjsu.edu/upload/course/course_969/Reading_and_Critiquing_Research.ppt
- Sorbello, B. C. (2008). Responding to a sentinel event. *American Nurse Today*, 3(10), 30–32. Retrieved from <http://www.americannursetoday.com/assets/0/434/436/440/5426/5428/5442/5446/5b587e3d-6b56-4558-b2f7-05ab3738549b.pdf>
- Vincent, D., Hastings-Tolsma, M., Gephart, S., & Alfonzo, P. M. (2015). Nurse practitioner clinical decision-making and evidence-based practice. *The Nurse Practitioner*, 40(8), 47–54. doi:10.1097/01.NPR.0000463783.42721.ef
- Wood, M. J., & Ross-Kerr, J. C. (2006). *Basic steps in planning nursing research: From question to proposal* (6th ed.). Sudbury, MA: Jones and Bartlett.
- Yoder, L. H. (2005). Evidence-based practice: The time is now! *Medsurg Nursing*, 14(2), 91–92.

