SHORT COMMUNICATION

Using critical appraisal tools to evaluate research and determine applicability to clinical practice

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ABSTRACT

Patient outcomes are improved when healthcare workers use Evidence-Based Practices (EBP). The cornerstones of EBP are finding and using robust research for clinical application. Evaluating the research findings worthy of inclusion can be difficult, especially for nurses who are not well versed in research practices. The use of Critical Appraisal Tools (CATs) can help nurses determine whether research findings are worthwhile and should be translated into practice for their patient populations or not. Several organizations have developed CATs to assist nurses in analyzing various types of research. Determining which tool is most relevant can be challenging for nurses. The content of this article helps nurses better understand the EBP process. The report includes a definition of critical appraisal, a review of the commonly used appraisal tools, and a description of how practitioners use them in evidence- based practice implementation to enhance patient care.

Key Words: *Evidence-based practice; Critical appraisal; Research; patient outcomes; Nursing; Methods*

INTRODUCTION

Evidence-Based Practice (EBP) is a strategy for improving health care by applying robust research evidence to clinical practice. The procedures used in EBP are essential for nurses [1]. A significant factor in EBP is applying robust research findings to clinical settings. In doing so, research is used to guide care and improve health outcomes. However, not every research report ought to be used to foster healthcare transformation. Some may have questionable reliability, validity, and applicability to specificclinical areas and as a result, would not enhance patient outcomes. Determining whether scholarly findings should be put into practice is essential in improving patient care [2].

Due to the variability in research quality and applicability, there is a real need to critically appraise research to assess the quality of the findings and applicability to specific clinical settings. If the scholarly work is worthy and pertinent, the research can and should be used to bring about positive changes in clinical settings [3]. Determining the usefulness of scholarly work sounds easy but has been problematic. One unfortunate result of the difficulty in assessing research findings has led to long delays in applying research findings. According to research findings reported by Melnyck currently, there is a fifteen-year gap between publication and the use of scholarship in clinical settings [4]. With the rapid increase in research, the need to shorten the time before study results are implemented has never been more important. Using Critical Appraisal Tools (CATs) can assist in reducing the research to application turnaround time.

The focus of this article is on the use of critical appraisal tools to assist in shortening the gap between findings and applications. A brief description of critical appraisal is offered, followed by a narrative of the most frequently used tools. Finally, a description of how practitioners use these assessment documents is provided to help the reader use the tools in a clinical setting.

MATERIALS AND METHODS

Defining critical appraisal

There are several steps nurses need to take in implementing research-derived interventions [5]. The first phase is determining the usefulness of research through appraising the work critically.

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According to Purssell, the process of critical appraisal includes many steps such as identifying if the study reports were written well, if the research processes were performed validly and reliably, and whether the results are in line with other research findings [6]. These are complicated steps that most nurses are not familiar with, so guidance is often needed to complete critical appraisals. A tool can be helpful. Most appraisal tools help practitioners give attention to these vital issues. In addition, many also help focus readers on determining whether the results can be applied to the practitioners' populations [7].

Available tools

There are many different critical appraisal tools available to assess scholarly work [2]. Due to the numerous types of research endeavors, such as qualitative, quantitative, and systematic reviews, there is not a universal document that evaluates these forms of research. Not having one CAT for all types of investigation is problematic as finding the right tool can be challenging. Some organizations have developed tools that cover more than one type of scholarship. For example, two well-established evidence-based practice organizations, the Joanna Briggs Institute (JBI) and Johns Hopkins University (JHU) have multiple tools to appraise various types of scientific investigations critically. The tools developed by JBI and JHU offer critical appraisal documents for randomized control trials, systematic reviews, qualitative studies, as well as other forms of scholarship. These can be used by nurses at all levels of practice and education from associate degrees through advanced degrees.

Other well-known critical appraisal tools are the Grading of Recommendation, Assessment, Development, and Evaluation (GRADE), Critical Appraisal Skills Programme (CASP), and Rapid Critical Appraisal Checklists [8]. These documents have been used for many years and are well accepted by evidence-based practitioners including bedside nurses.

The James M Anderson Center for Health Systems Excellence, a newer entity in evidence-based evaluation, has also developed multiple appraisal tools. The Anderson Center has published "Let Evidence Evaluation Tools and Resources," more easily referred to as "LEGEND." The Anderson tools and resources are relatively easy to use and provide a valuable tool for nurses to appraise single research articles.

In addition to creating primary research Critical Appraisal Tools (CATs), the Anderson Center has developed a tool to appraise practice guidelines. This document allows for nurses to critically appraise the guidelines when looking making improvements in practice. Beyond evaluating research articles and practice guidelines, the Anderson Center has a tool to help assess and grade a body of evidence. In other words, this document assists nurses in moving beyond assessing one article and determining the strength of a group of scholarly articles that all have the same focus on a specific care practice.

TABLE 1
Sources of frequently used critical appraisal tools

Name of Organization	Tool Name	Types of Appraisal Tools	Website Link/Source
Critical Appraisal Skills Programme (CASP)	CASP Checklist	Research, Practice Guidelines, Non-Primary Research	https://casp-uk.net/casp-tools-checklists/
Johanna Briggs Institute (JBI)	JBI Checklist	Research, Non-Primary Research	https://jbi.global/ebp
Johns Hopkins University (JHU)	JHU Research Evidence Appraisal Tool & JH Non-Research Evidence Appraisal Tool	Research, Practice Guidelines, Non-Primary Research	https://www.hopkinsmedicine.org/evidence-based-practice/ijhn_2017_ebp.html
James M Anderson Center for Health Systems Excellence	LEGEND	Research, Practice Guidelines, Non-Primary Research	https://www.cincinnatichildrens.org/research/divisions/j/anderson-center/evidence-based-care/legend
Melnyk and Fineout-Overholt	Rapid Critical Appraisal Checklists	Research, Practice Guidelines, Non-Primary Research	Melnyk BM, Fineout-Overholt E, editors. Evidence-based practice in nursing and healthcare: A guide to best practice. Lippincott Williams & Wilkins; 2019

The table shows information about several of the commonly used critical appraisal tools available. This table is not exhaustive as other CATs are available (Table 1).

Application

As previously described, critical appraisal tools are beneficial to practitioners in evaluating both one study and more than one scholarly publication. CATs are used to answer whether one research article is worthy of implementing a practice change or not. For example, nurses on an ICU unit notice an increase in injuries related to delirium. The nurses decide to find research on how to reduce injuries. A brief literature search is performed using the Cumulative Index to Nursing and Allied Health Literature (CINHAL). One full-text research article is found and downloaded. In the report, the authors describe positive results after the implementation of a new treatment for delirium. After an initial reading, the nurses think the intervention could be applied to their clinical setting. However, before proposing a change in practice, the group decides to use the LEGEND tool for evaluating this research article. Using the CAT for guidance, the nurses realize that the investigative methods used are not well described by the authors of the delirium study. This then causes them to wonder about the quality of the research process and whether it should be implemented in their ICU. As a result, the practitioners decide to do a thorough literature search to determine if additional research studies refute or support the findings of this one article.

After searching PubMed or Scholar Google, the ICU nurses located several scholarly articles about this new intervention for delirium. After retrieving the papers, they evaluate what CATs to use to easily appraise the delirium prevention intervention articles. Following reading through each of the relevant research reports, the ICU nurses determine to use The Anderson Center's tool to assess each article and the body of evidence. The chosen LEGEND tool helps guide them in their evaluations. The nurses decide that there is a good fit with their patient population, and there is enough solid evidence for proposing a practice change in their ICU. Their proposal is made,

and the new delirium practice is instituted with their patient population. As part of the EBP process, the outcomes are initially assessed and found to be positive. Reassessment of the outcomes is continued to assure the best patient outcomes.

CONCLUSION

Using established critical appraisal tools for evaluating research articles and bodies of evidence assists nurses at all levels of education and practice in determining which patient care changes are needed to improve outcomes. There are many appraisal tools available, and not one that fits all types of scholarship. Choosing and utilizing critical appraisal tools that fit your needs will promote positive changes in health care.

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