The Role of Systematic Reviews in Teaching Evidence-Based Practice

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Evidence-based practice has surely taken on “movement” status. Indeed, some authors have declared that evidence-based practice (EBP) is one of the most significant issues to ever develop in global healthcare. Both evidence and opinion support this claim. I searched CINAHL (via EBSCOhost) and MEDLINE and PsychINFO (via Ovid) to test the growth of EBP as a theme in published literature. When I searched the phrases “evidence-based practice” or “evidence-based nursing” or “evidence-based medicine” or used the controlled language for these phrases, I netted 135 results for the 50-year span from 1955 to 1995. Using the same approach but filtering for the 13-year span from 1996 to 2009, I netted 61,713 results. Even if one assumes that some of the results were redundant, it is obvious that interest in EBP has accelerated since the mid-1990s. This burst of activity coincides with the birth of both the Cochrane Collaboration Database of Systematic Reviews (in 1995) and the Joanna Briggs Institute (in 1996), the most influential international collaborations aimed at advancing EBP.

AUTHENTIC BEST AVAILABLE EVIDENCE

The surge to join the movement has produced some confusion in what we authentically label EBP. Most definitions of EBP include the words “best available evidence,” “clinical expertise,” and “patient preferences.” The claim of EBP is that a blend of these elements will lead to ideal patient outcomes. While our understanding of the best way to operationalize this tripartite definition will surely continue to develop, educators can help clear the confusion if they prepare clinical nurse specialists (CNSs) to facilitate bona fide evidence-based efforts in clinical settings. To move beyond a “we cite references” approach to EBP toward dependable, genuine approaches, educators must ensure that their students can identify what best available evidence means.

Best available evidence implies 3 key themes. First, “best” means that the evidence has been weighed against criteria and judged to be superior to other information. This idea of rating the quality of evidence has led to a plethora of hierarchies intended to rank our confidence and sense of urgency for implementing the findings. Second, “available” implies that someone has comprehensively searched for all information that exists. “Available” does not suggest handy or easy-to-find. Finally, it is “evidence” that generates the greatest debate related to what counts as legitimate sources of information to inform our practice. Many argue that evidence from rigorous research, namely, meta-analyses of large randomized controlled trials, is the most appropriate evidence to inform decisions about the effect of interventions because they control more sources of bias, pool the power of multiple studies, and are least likely to mislead.

Certainly, nursing practice requires that we understand what interventions work, cause harm, or have little effect. But we are interested in more than that. Pearson et al conceptualized an EBP model where global health requires evidence of feasibility, appropriateness, meaningfulness, and effectiveness. They argued that when investigators generate research, they use methods that will allow them to best answer the purpose of the investigation so that the nature of the ideal approach to generating evidence varies. Randomized controlled trials are ideally suited for questions of effectiveness, but they cannot inform us about how patients experience a phenomenon. Therefore, when healthcare providers consider the evidence, they must weigh the strength of the evidence in terms of the purpose of the question.

Nonetheless, regardless of the question and the type of evidence its answer requires, “best available” implies both an exhaustive search and critical appraisal of what evidence exists. Systematic reviews sit on top of the heap of most evidence hierarchies because they are transparent in their methods, they involve a rigorous and exhaustive search and appraisal of available evidence, authors extract only the evidence that merits pooling or summarizing, and authors use standardized approaches to the synthesis of data. If quantitative data from multiple studies are amenable for statistical pooling, the systematic review includes a meta-analysis, usually depicted in a forest plot. If the quantitative data cannot be pooled via meta-analysis, it can be represented in a tabular or narrative form. Findings from qualitative studies can be carefully synthesized to find commonalities and differences in experiences. While much remains to be learned and debated about the proper approaches to metasynthesis of qualitative works, the Joanna Briggs Institute has drawn...
upon the work of others to develop one approach to meta-aggregation of findings from qualitative studies.  

INTEGRATING SYSTEMATIC REVIEWS IN CNS INSTRUCTION

Clinical nurse specialist curricula must emphasize the use of systematic reviews to inform nursing practice if faculties are to prepare students for authentic EBP. They will need to sequence content and skill development so that students gain an increasingly sophisticated understanding of the role of systematic reviews in EBP. The goal of instruction would be that students can, at the very least, find and critically appraise systematic reviews for their appropriateness for practice implementation and, at the very most, participate in the systematic review process in collaboration with a researcher. Topics related to the role of systematic reviews might sequence as follows:

- definition and role of systematic review in evidence-based healthcare
- overview of the systematic review process (questions, searching, retrieval of evidence, appraisal, extraction, pooling/summarizing evidence, reporting)
- questions of feasibility, appropriateness, meaningfulness, and effectiveness relevant to advancing nursing practice
- appraising the quality and exhaustiveness of search strategies
- fundamentals of appraising various types of research (validity in quantitative evidence, credibility in qualitative evidence) and the use of standardized appraisal tools to determine inclusion of research in a systematic review
- methods of data extraction for both quantitative and qualitative evidence
- methods of data pooling: meta-analysis of quantitative data, meta-aggregation of qualitative findings, narrative/tabular alternatives
- interpreting synthesized quantitative and qualitative findings
- clinical practice guidelines as metasources of evidence
- next steps: appropriate implementation of synthesized findings

These topics build on each other and would most likely be integrated throughout multiple courses. Some of these topics may already be incorporated in a research design course (eg, appraising primary research).

Incremental activities that align with these topics and mirror the systematic review process might include the following:

- identify a systematic review from a search of systematic libraries, such as the Cochrane Library and Joanna Briggs Library of Systematic Reviews, versus a filtered search of bibliographic databases
- analyze a published systematic review protocol from the Cochrane Library (http://www.cochrane.org/reviews/en/index_list_all_protocols.html) or the Joanna Briggs Library (http://www.joannabriggs.edu.au/pubs/systematic_reviews_prot.php) to identify methods and transparency
- write 4 questions related to a single topic that reflect feasibility, appropriateness, meaningfulness, and effectiveness using a standard template; identify “ideal” evidence to inform each
- develop a 3-phased search strategy for one question (phase 1—search large databases to uncover key words, phase 2—structured search using Boolean operators and controlled language of multiple databases, phase 3—hand search of reference lists); detail the net number of results for each database
- critically appraise primary research (netted from the search) using a standardized checklist
- extract quantitative data and/or qualitative findings from 1 example of a quantitative and qualitative research article using a standardized form
- analyze the pooled findings of a meta-analysis (requires knowledge of odds ratios, mean differences, and confidence intervals) and a meta-aggregation
- identify a clinical practice guideline that uses several systematic reviews to transparently inform the guideline; compare this type of guideline with one that lacks transparency or rigor in development
- critically appraise systematic reviews to develop an evidence implementation project

CONCLUSIONS

Clinical nurse specialists are uniquely positioned to facilitate implementation of evidence in practice. However, they must be prepared to competently identify, appraise, and interpret the best available evidence to make judgments about how best to use the information. In addition to fostering clinical expertise and the incorporation of patient preferences, CNS educators need to develop students’ knowledge and skills to enable them to genuinely broker the best available evidence into practice.

References