DNP-Prepared Nurses as Practitioner-Researchers: Closing the Gap Between Research and Practice

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In this article, the authors present a model that conceptualizes the differentiation and interrelatedness of doctor of nursing practice (DNP)-prepared nurses and doctor of philosophy (PhD)-prepared nurses. They also discuss how DNP-prepared nurses, as practitioner-researchers, can help close the research-to-practice gap and improve quality of care by collaborating in translational research.

Over the past 10 years, national leaders in the major healthcare fields have called for a transformation of the healthcare system in the United States. A growing gap exists between research and practice, and many clinicians are poorly prepared to critically evaluate or apply research findings and engage in evidence-based practice. Any transformation of the healthcare system will require clinicians who clearly understand the context of healthcare delivery and can translate newly discovered/reported scientific knowledge into the provision of health care to the diverse subpopulations of the United States.

Translational research, a developing science, may help narrow the research-to-practice gap and transform health care. However, to be effective, translational research requires a collaboration between experts in research methods with experts in clinical practice. As practitioner-researchers, DNP-prepared nurses are uniquely qualified to reduce the research-to-practice gap. These nurses understand the critical role that context plays in the successful application of research findings to the clinical setting and in the generation of new knowledge from the clinical setting itself. DNP-prepared nurses are especially needed now; the healthcare system in the United States is in turmoil. Despite escalating healthcare costs, the quality of care has not shown corresponding improvement. As examples: Adults receive only about half of the healthcare services recommended to them, 68% of adults aged ≥20 years are overweight or obese, and one-third of obese adults have never received advice from their healthcare practitioner (HCP) about diet.3 To complicate matters, the US healthcare system is difficult to navigate, and it focuses on specialty care and acute care rather than primary care. This focus leads to fragmentation of services and poor communication among HCPs, contributing to medical errors.4

Furthermore, a well-documented gap exists between research and practice; too few clinicians are adequately prepared to collaborate in research and engage in evidence-based practice (EBP).2 Over the past 10 years, reports from the Institute of Medicine (IOM)5,6 have stimulated national quality initiatives and led to re-imaging how research is conducted and applied in practice, and how researchers and clinicians are educated. In Health Professions Education: A Bridge To Quality,7 the IOM stated that HCPs, including nurses, physicians, and pharmacists, were not adequately prepared in their academic programs to provide the highest quality and safest care possible. The IOM called for a major overhaul to prepare HCPs for new roles. In particular, the IOM has called on healthcare educational program developers to re-conceptualize their preparation of HCPs—emphasizing inter-professional collaboration and translational research.5,6 The purpose of this article is to discuss how DNP-prepared nurses can contribute to improving patient outcomes and participate in transforming the US healthcare system. The authors present an organizational framework for explicating the role of the DNP-prepared nurse, and they make curriculum recommendations to enhance these graduates’ skills in transforming healthcare delivery in this country.

Nursing Educators’ Response to the Challenge

In 2002, the American Association of Colleges of Nursing (AACN) developed a Practice Doctoral Task Force that published a DNP position statement calling for a transformational change in the education required for professional nurses who will practice at the most advanced level.7 Nursing educators’ response to this challenge was swift. In 2008, there were 113 research-focused doctoral (PhD) programs and 92 practice-focused doctoral (DNP) programs. Plans exist to implement an additional 102 practice-focused programs in colleges of nursing across the nation.8

The AACN has defined research-focused doctoral programs (ie, PhD programs) as those that prepare nurse scientists and scholars, with curricula focused on scientific content and research methodology. The final product of a research-based doctoral program is a dissertation on an original research project. By contrast, practice-focused doctoral programs (ie, DNP programs) are designed to prepare experts in specialized advanced nursing practice. Curricular focus is on EBP, the application of high-quality research findings to the care of patients in the real world.7 Practice-focused doctoral programs typically require a practice application-oriented final DNP project instead of an original research project.7 The authors of this article propose that simply applying EBP is insufficient to transform the US healthcare system. Instead, DNP programs must prepare graduates to not only implement EBP, but also to evaluate, refine, and adapt evidence-based interventions or treatments within a specific practice context. PhD and DNP programs differ in the goals, coursework, and outcome competencies of their graduates, but they each represent the highest level of preparation in nursing. Both programs lead to terminal degrees in nursing, one in research and one in clinical practice.7 Compared with the research doctorate, the practice-focused doctorate has a stronger emphasis on EBP, evaluation, quality improvement (QI), and translational research, and a lesser emphasis on theory, meta-theory, and traditional research methods such as experimental and quasi experimental designs.

The AACN’s DNP Roadmap provides guidance in conceptualizing the contribution of the DNP to the research mission of nursing.9 DNP programs within colleges of nursing are advised to focus on strengthening the linkages between practice and research efforts within the college, as well as the connection between the college of nursing and its practice partners in the community. Specific recommendations to colleges of nursing that will strengthen this linkage include developing DNP and PhD teams to provide leadership in the translation of basic research into the healthcare setting.

Practitioner-Researchers—According to Essential III, Clinical Scholarship and Analytical Methods for Evidenced-based Practice, of the Essentials of Doctoral Education for Advanced Nursing Practice,7 DNP prepared graduates must be equipped with skills to (1) critically assess the suitability of evidence for implementation into practice, (2) design and implement process and outcome evaluation studies within a practice setting, and (3) be QI leaders. The authors suggest that DNP-prepared nurses go beyond simply applying evidence into practice and actively evaluate the results of this application. The authors also suggest that DNP-prepared nurses generate practice-based knowledge not only by evaluating existing applications but also by developing new applications from the evidence. DNP prepared graduates will be practitioner-researchers who are prepared to play a major role in transforming, not just applying, their newly gained knowledge.

An analogy may be useful. Readers are asked to think about the electrical grid and the local power distribution network. Electrical energy is produced at a generating plant, but, at this point, the energy can not be readily used by consumers. For the energy to heat a house or run a machine, it must be transformed and delivered to the point of use (eg, residences, industrial plants). An analogy in health care is the generation of
new knowledge by scientist-researchers. This new knowledge is not always immediately useful to clinicians across practice settings. It must be transformed and distributed so that it can be used in specific applications by HCPs in primary care, community-based care, or acute care. DNP-prepared nurses transform knowledge generated in research into clinically feasible studies and applications. Unlike the electrical grid analogy, the transformation and application of knowledge in the clinical context may generate new basic science or clinical questions.

Practitioner-researchers are emerging in many fields in response to the rapid increase in scientific knowledge and the need to translate this knowledge into clinical practice.10 Because the IOM reports on quality, greater emphasis has been placed on the need for evaluation of the efficiencies and effectiveness of health care. Every practice setting is recognized as a potential research site. With this recognition comes the need for collaboration between research-focused practitioners and clinicians.

As practitioner-researchers, DNP-prepared nurses can assist in bridging the gap between scientific discovery and practical application in nursing. Whereas the scientist-researcher seeks to explain or predict phenomena on a grand scale, the practitioner-researcher conducts research focused on concrete information about local and contingent situations.11 DNP-prepared nurses can lead the effort of knowledge transfer by recognizing potential relationships between scientific discovery and the context of care, as well as facilitating practice change. In addition DNP-prepared nurses, as practitioner-researchers, can develop new knowledge related to nursing and healthcare delivery and related patient care outcomes. DNP-prepared nurses can be defined as context experts leading the transfer of research findings into practice through identifying research priorities, facilitating practice change, and evaluating practice outcomes.

**Conceptual Underpinnings**—The authors have developed a framework to conceptualize the differentiation, as well as the interrelatedness, of DNP- and PhD-prepared nurses. This framework (Figure) has been derived from practitioner-researcher/scientist-researcher and translational science models. Translational science is an emerging field that addresses the process by which new knowledge, methods, and techniques are transformed into clinical applications to improve the population’s health.12,13 Translational research and knowledge translation are often used interchangeably in the literature. For the purpose of this discussion, the authors have defined translational research as the methods needed for knowledge translation to occur, whereas knowledge translation is the overarching principle of judicious application of synthesized knowledge to improve health outcomes for individuals and for the healthcare system.14,15 Translational research occurs in two continuous phases.16 The first and best-known phase is T1—the process of applying discoveries made in the laboratory (often known as bench or basic research) to randomized clinical trials. This phase includes basic research and efficacy studies. The T2 phase of translational research occurs when evidence generated in T1 studies is applied to real-world practice in effectiveness or dissemination studies.13 The purpose of effectiveness studies, sometimes called implementation studies, is to evaluate health outcomes of heterogeneous populations under real-world conditions; the emphasis is on maximizing external validity.13,16 Dissemination studies assess factors that facilitate or hinder widespread adoption of interventions that result in improved health status. Smoking cessation studies are examples of dissemination research that has widely influenced behavior and resulted in health policy changes.

An organizing model derived from translational research depicts a central circle, with overlapping circles indicating two domains—that of the scientist-researcher, traditionally the domain of the PhD-prepared nurse, and that of the practitioner-researcher, conceptualized as the domain of the DNP-prepared nurse. Boundaries are not rigid, allowing individual interests, experience, and pre- and postdoctoral opportunities to create roles. However, the purpose of developing the practitioner-researcher role is to broaden the influence of doctorally prepared nurses throughout the process of basic discovery to the improvement of health outcomes. The inner circle represents phases of the translational research process, which expands from the dichotomy of T1-T2 to four phases: basic research, efficacy studies, effectiveness studies, and implementation/dissemination studies.

**Basic research.** Basic or discovery research is the knowledge generating phase in which new data are generated using traditional research methodologies.17 Although PhD-prepared nurses and scientists from other professions dominate this phase, researchers and practitioners need to collaborate to ensure that the research, especially that funded by the public, is relevant and has potential to improve health outcomes.18 At this stage, deductive, as well as inductive, approaches (emerging from practice) are acknowledged as legitimate strategies in knowledge generation.19

**Efficacy studies.** Randomized controlled trials (RCTs) exemplify efficacy studies. The goal of these studies is to identify causal relationships between intervention and outcome. These studies, characterized by highly controlled conditions, are often intensive and complex. Cost and sustainability of the intervention are rarely major concerns.

**Effectiveness studies.** Effectiveness studies are conducted under real-world conditions on heterogeneous populations. Cost, sustainability, and organizational acceptance are major concerns.

**Implementation/dissemination studies.** These studies address facilitators and barriers to widespread adoption of an intervention, and they attend to institutionalization of the intervention and to health policy implications. HCPs actively apply evidence to solve a particular problem and, in doing so, gain additional knowledge to solve the problem. New knowledge is then generated through the active process of problem solving.20

Program evaluation and QI studies are important components of implementation and dissemination research. Although these studies are usually setting specific and, therefore, have limited generalizability, they are crucial to understanding how well the intervention was implemented and adopted by the organization and whether the intervention resulted in improved outcomes within the organizational context. As one moves from basic research to implementation and dissemination, context becomes increasingly important. Research conducted during the early stages of basic or efficacy studies is often purposefully stripped of context when generalizability is a goal.21 However, during effectiveness studies, context becomes increasingly important as practitioner-researchers seek to apply research at the individual, unit, or organizational level. As context experts, DNP-prepared nurses need skills to conduct effectiveness, implementation, and dissemination studies, including program evaluation and QI studies.

Between each of the phases depicted in the model, arrows indicate a bidirectional flow of knowledge. Although knowledge is generally thought of moving forward as it is translated and transformed, negative or unexpected results at any stage may trigger additional study at a previous phase of research. Knowledge translation is viewed as an iterative and dynamic process that rarely, if ever, flows in an orderly forward manner.22 However, only a unidirectional arrow is indicated between implementation/dissemination and basic research. Seldom is knowledge obtained during basic research appropriate for implementation/dissemination before undergoing efficacy and effectiveness studies. Knowledge is not static; therefore, the process does not end at implementation/dissemination but, rather, becomes a stimulus for new research.
Need for Translational Research Expertise

As practitioner-researchers, DNP prepared nurses can help close the research-to-practice gap and then improve quality of care by engaging in translational research. DNP prepared nurses must bridge the gap between research and practice by learning to critically analyze evidence and to design and implement evaluation studies including QI, implementation/effectiveness, and dissemination studies and/or clinical projects.

Application Exemplars—The Diabetes Prevention Program (DPP), an RCT, showed that type 2 diabetes mellitus (DM) can be delayed or prevented with intensive lifestyle modification. However, this resource-intensive study cannot be easily replicated in everyday practice settings. To translate evidence gathered in the DPP to everyday practice, effectiveness studies are needed. Two such studies, conducted by MDs and PhDs, are ascertaining whether the educational intervention developed in the DPP can be implemented in community settings (eg, a YMCA) using a group approach rather than the more costly individualized approach used in the DPP. However, one need not wait for results of effectiveness studies to apply evidence derived from the DPP to clinical practice. For example, an individual practitioner-researcher may decide to counsel all patients at high risk for developing type 2 DM about weight loss and exercise, and monitor their fasting blood glucose levels and weight (based on the fact that these strategies have proved to be effective).

Based on the results of this experience, the same practitioner-researcher may decide to implement a QI program at the practice level. In this example, all patients would be asked to complete a risk assessment questionnaire to identify those at high risk for developing type 2 DM. All-risk patients would be asked to attend group lifestyle modification classes given by the practice. The practitioner-researcher would monitor the risk assessment process to determine whether patients are being screened, the number of high-risk patients identified, the proportion of high-risk patients referred to the program, the proportion of high-risk patients attending the program, and participants’ pre- and post-program weight and blood glucose levels. In these examples, context is critical.

The practitioner-researcher may discover practice-level barriers to the program, such as the receptionist being too busy at certain times to give patients the screening questionnaire. In addition to evaluating process measures, the practitioner-researcher would also assess outcome measures, such as weight, and determine whether the program was successful in decreasing this risk factor in high-risk patients.

Discussion

Recognition of the gap that exists between research findings and their application to practice is growing. Reports from several national organizations have called on healthcare educational programs to re-conceptualize their preparation of HCPs, emphasizing inter-professional collaboration and translational research as a means to reduce this research-to-practice gap. In today’s complex healthcare environment, HCPs must be able to translate newly discovered relevant scientific knowledge into their provision of health care and navigation of healthcare systems to improve patient outcomes. Understanding the role of context is crucial not only in the successful application of research findings in the clinical setting, but also in the generation of new knowledge from the clinical setting itself. As context experts, DNP graduates will play a leading role in the implementation and dissemination of newly acquired knowledge in developing new standards of practice, as well as in the creation of new knowledge grounded in the practice setting. Curricula in DNP programs must provide the content that DNP graduates will need to become skilled practitioner-researchers. DNP-prepared nurses, as practitioners-researchers, must be well versed in scientific methods, including evaluation methods, systems and organizational theories, and health policy, in order to effectively diminish the gap between scientific discovery and clinical application. Curricula must reflect these competencies and faculty must incorporate them into the scholarly project that all DNP students complete as part of their doctoral education. Collaboration is an essential skill for all researchers and practitioners in 21st-century health care.

DNP curricula must also provide students with opportunities to collaborate with scientist-researchers in nursing and in other disciplines. Perhaps in the future, DNP and PhD students will collaborate on projects that span the continuum of translational research, yet permit students to develop their own individual areas of expertise.

The aim of the organizational framework presented in this article is to conceptualize the differentiation, as well as the interrelatedness, of DNP- and PhD-prepared nurses. The model depicts a central circle with overlapping circles indicating two domains—that of the scientist-researcher, traditionally the domain of the PhD-prepared nurse, and that of the practitioner-researcher, conceptualized as the domain of the DNP-prepared nurse. This model, along with other purposes, broadens the influence of doctorally prepared nurses throughout the entire process of basic discovery to the improvement of health outcomes and indicates areas where collaboration between scientist-researchers and practice-researchers is needed.

Conclusion

The amount of scientific knowledge is seemingly growing exponentially, and the need for translating this knowledge into clinical practice has never been greater. DNP graduates must be prepared in rigorous doctoral curricula to address this need. As practitioner-researchers, DNP graduates are context experts who will be key to closing the research-to-practice gap and improving health outcomes in the United States.

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References

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