



research that has systematically examined the practice scholarship outcomes of doctor of nursing practice (DNP) degree-holding nurses currently engaged in practice.

This study aimed to identify and examine: (a) the frequency of engagement in practice scholarship, (b) the relationship between the knowledge gained in DNP programs and the frequency of engagement in practice scholarship, and (c) the relationship between engagement in practice scholarship, work role, and years since graduation with a DNP degree, as reported by practicing nurses.

Results of this study will inform educators, employers, and health care leaders about the practice scholarship competencies of DNP-prepared nurses and the degree of engagement in scholarship activities among practicing nurses. Additionally, this study's findings provide the foundation for further research to describe and measure the outcomes and impact of nursing practice scholarship on patients, systems, populations, quality and safety, policy, and the nursing profession.

## Background

Since 2001, efforts to improve health care quality have aimed to reduce patient care deficits in six dimensions identified by the Institute of Medicine (IOM): safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity (IOM, 2001). Berwick et al. (2008) stated that improving the US health care system requires simultaneous pursuit of three aims: improving the experience of care, improving the health of populations, and reducing per capita costs of health care. In 2014, Bodenheimer and Sinsky recommended that the triple aim be expanded to the quadruple aim by adding the goal of improving the work life of health care providers (Bodenheimer & Sinsky, 2014).

In response to these challenges, health care delivery is experiencing a paradigm shift from high-cost acute care treatment to primary care prevention and treatment of chronic disease. There is also an emphasis on health promotion and population health to promote health equity. Similarly, reimbursement for health care is shifting from quantity or "fee-for-service" to value-based reimbursement for evidence-based quality metric outcomes. Health care providers require new competencies and skillsets in population health, informatics, quality improvement, systems level leadership, policy, and financial acumen to address this paradigm shift (Fiscella, 2019; Henkel & Maryland, 2015; Poghosyan & Carthon, 2017).

In addition, the Institute of Medicine published a landmark study, *The Future of Nursing: Leading Change, Advancing Health* recommending that nurses should practice to the full extent of their education and training, achieve higher levels of education and training, be full partners in redesigning health care in the United States, and engage in effective workforce planning and policy-making (IOM, 2010). Recognizing this need, the AACN

engaged in careful reflection and collaboration with practice partners to develop the DNP degree. Health care thought leaders understood that the level of change needed within systems and communities across the United States required doctoral education. The emergence of the DNP-prepared nurse propelled the nursing profession and health care forward toward meeting these aims and recommendations, based on the competencies of the DNP Essentials of Education (AACN, 2006). Currently, the National Academy of Medicine (2020), formerly the IOM, is conducting a consensus study with similar goals and considerations to update and extend this sentinel report to *The Future of Nursing 2020–2030*, leading the profession into the next decade.

The introduction of the DNP degree and concomitant competencies related to practice scholarship have advanced the nursing profession toward the achievement of the IOM goals and respond to health care delivery trends. Practice scholarship generates new knowledge through innovation, evidence translation, and improvement processes (Burson, 2020). Practice scholarship incorporates integration and application (Boyer, 1990); integration scholarship uses concepts from nursing and other disciplines to create new insights, and application scholarship uses knowledge and evidence to solve practice issues. The scholarship of application allows advanced practice nurses to reflect about clinical practice, think collectively and strategically about advances for best practice, and put processes into place to promote systemic and optimal change across the care continuum (Soukup, 2000).

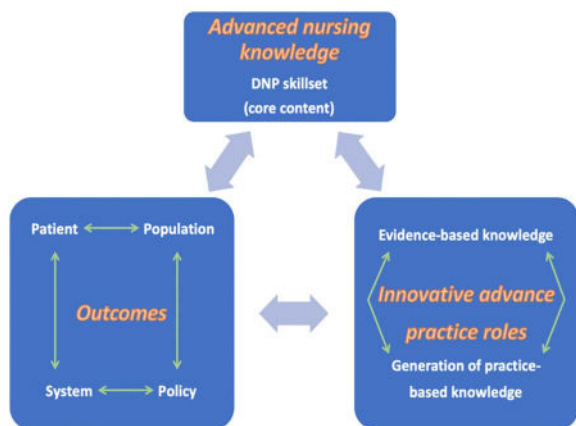
Numerous national organizations that establish educational standards in advanced nursing practice, including AACN (2006; 2015; 2018), the National Organization of Nurse Practitioner Faculties (2016), and the Council on Accreditation of Nurse Anesthesia Educational Programs (2019) support the utilization of DNP-prepared nurses to achieve practice scholarship outcomes in organizations. Numerous publications from the literature differentiate practice scholarship from traditional research and provide rich resources to describe exemplars of practice scholarship (Auerbach et al., 2014; Brown & Crabtree, 2013; Burson, 2020; Kaplan & Brown, 2009; Limoges & Acorn, 2016; Limoges et al., 2015; Melnyk, 2013; Peterson & Stevens, 2013). A compilation and synthesis of examples of the application of nursing practice scholarship from national education standards and the literature, aligned with the DNP Essentials, are represented in **Table 1** (AACN, 2006).

## Conceptual framework

The conceptual framework guiding this study was *The Actualized DNP Model* (**Figure 1**) described by Burson et al. (2016). The model illustrates the varied components required of the DNP-prepared nurse in practice that contribute to patient, system, population, and policy

**Table 1. Examples of Practice Scholarship Aligned with the AACN (2006) DNP Essentials**

AACN DNP Essential	Examples
Essential I: scientific underpinnings for practice	Develops unique clinical nursing programs or interventions with documented effectiveness
Essential II: organizational and systems leadership for quality improvement and systems thinking	Secures competitive funding to support innovations in practice Establishes and evaluates quality improvement initiatives Leads in the development, review, and evaluation of clinical practice models to transform health care delivery Communicates best practices to lay groups to promote translation and implementation of research findings Consults with health care organizations to build capacity for improving care and implementing evidence-based practice Serves as an expert in leadership positions, committee membership, health care boards, and other involvement related to practice expertise in regional, national, or international arenas
Essential III: clinical scholarship and analytical methods for evidence-based practice	Develops best practices for translating evidence to practice based on results of translational and implementation science Translates research and uses evidence to improve health and generate practice-based knowledge Translates research and uses evidence to improve health, affect practice, and effect change in health systems Develops clinical guidelines, innovations, and new program initiatives Assists with or conducts systematic reviews that synthesize summarize research findings to recommend solutions to current clinical problems
Essential IV: information systems/technology and patient care technology for the improvement and transformation of health care	Analyzes system-wide data to evaluate practice patterns and/or uncover new issues related to practice from such data Analyzes big data or conducts policy analysis at the community, state, national, or international level Uses secondary data from the electronic health record to evaluate health care processes and patient outcomes, disseminating results to the external community to improve quality of care
Essential V: health care policy for advocacy in health care	Influences policy through leadership activities at the local, national, and international levels and participates in policy think tanks Disseminates policy papers through peer-reviewed media
Essential VI: interprofessional collaboration for improving patient and population health outcomes	Provides expert review for quality improvement projects, journals, periodical, or textbooks Serves as a clinical practice specialist in partnerships that advance research, clinical improvements, policy development, and/or implementation Engages with stakeholders including patients, coalitions, corporations, and industries to educate the workforce, develop clinical innovations, and/or conduct research and practice transformation Leads interprofessional teams to improve health and transform health care based on expertise
Essential VII: clinical prevention and population health for improving the nation's health	Evaluates and reports population health, satisfaction, and cost outcomes Develops educational health promotion and disease prevention programs
Essential VIII: advanced nursing practice	Publishes to influence practice via peer-reviewed venues Disseminates practice-based findings at regional, national, or international meetings Disseminates clinical programs or quality improvement initiatives in regional, national, or international arenas Consults, reviews, or evaluates clinical nursing programs in other academic institutions Recognized nationally by peers for expertise, excellence, and innovation within an area of practice specialty Receives regional, national, or international awards or recognition of contributions by a peer professional group
<i>Note: AACN = American Association of Colleges of Nursing; DNP = doctor of nursing practice.</i>	



**Figure 1.** The actualized DNP model. Note: DNP = doctor of nursing practice. Burson, R., Moran, K. J., & Conrad, D. (2016). Why hire a doctor of nursing practice-prepared nurse? The value added impact of the practice doctorate. *Journal of Doctoral Nursing Practice*, 9, 152–157. <https://doi.org/10.1891/2380-9418.9.1.152>. Reprinted with permission.

outcomes and ultimately affects the profession of nursing. Components of the model begin with the DNP-prepared nurse's unique education, where the nurse attains the knowledge and competencies outlined in the DNP Essentials (AACN, 2006). The knowledge and skills acquired include abilities to apply scientific evidence to address practice gaps, systems leadership skills, policy competencies, and business and advocacy acumen to lead interprofessional teams. These competencies are built on the foundation of an advanced nursing curriculum and lifelong continuing education. However, for the DNP-prepared nurse to achieve desired practice outcomes, opportunities to apply evidence-based practice (EBP) and generate practice-based knowledge require time for practice scholarship in the workplace. The model's components guided the study constructs to explore the complexity of knowledge, the DNP advanced practice roles, and time in the work setting to apply knowledge and competencies to realize practice scholarship outcomes.

### Knowledge gained about practice scholarship as reported by doctor of nursing practice graduates in practice

A recent study by Kesten et al. (2021) surveyed practicing DNP-prepared nurses to determine the practice scholarship knowledge and competencies acquired from their DNP programs. The majority of respondents agreed or strongly agreed that they had gained knowledge and competencies in: (a) translating research evidence into practice (98.1%); (b) synthesizing the literature to identify a solution for a practice issue (97.8%); (c) identifying, measuring, and/or evaluating outcomes (97.8%); (d) designing and implementing EBP and research (97%); and (e) designing and implementing quality improvement (95.4%).

These findings demonstrated that the surveyed DNP degree graduates perceived they had gained the practice scholarship knowledge and competencies needed to serve as full partners in health care redesign and improvement, which aligns with the recommendation that was put forward in the IOM's (2010) *Future of Nursing* report. Additionally, a majority of respondents agreed that they had gained knowledge and competencies in: (a) disseminating outcomes of practice scholarship (94.0%), (b) leading interprofessional teams in scholarship (93.3%), (c) sustaining practice change (92.9%), and (d) developing and implementing health care policy (86.9%). Survey results indicated respondents only moderately agreed that they had gained the needed knowledge and competencies in business and finance (56.8%), which suggests that there is an opportunity to strengthen this essential competency (Kesten et al., 2021). The survey items of knowledge and competencies gained about practice scholarship as a result of graduating from a DNP program aligned with the DNP Essentials (AACN, 2006).

### Advanced nursing practice role implementation using new competencies

In the second component of the conceptual model, the DNP-prepared nurse implements advanced roles to affect organizational change and develop new knowledge. Thompson and Barcott (2019) introduced the significance and concept of the practicing nurse scholar's role as a "knowledge broker." They emphasized that the knowledge broker's role is to facilitate the translation of useful research to practice and policy by connecting stakeholders through meaningful engagement. The knowledge broker role has been increasingly recognized globally as key to translating science into practice and policy.

The DNP-prepared scholar, equipped with practice scholarship knowledge and competencies, is ideally suited for this role. The knowledge broker role could be used in health care organizations because it is currently used at the National Institutes of Health. There is great potential for the DNP-prepared scholar in the role of knowledge broker to improve access to, and availability of, information and health care, address health literacy, and reduce health disparities among populations, thereby meeting the IOM goals.

### Evaluation of practice scholarship

Nearly 15 years after introducing the DNP degree, stakeholders are expecting practice outcomes from these scholars. The assessment and evaluation of nursing practice scholarship outcomes and the degree of engagement in practice scholarship by DNP-prepared nurses needs further exploration. Some authors have used traditional research scholarship benchmarks, such as peer-reviewed publications and presentations, to evaluate DNP practice scholarship outcomes (Broome et al., 2013; Redman et al., 2014). Redman et al. (2014)

found from a literature review of publications authored and coauthored by DNP-prepared nurses that more than half of the 690 publications were focused on clinical practice; the next most frequent foci were health care delivery systems, quality and safety, and nursing education. This evidence illustrates that DNP-prepared nurses are contributing to the literature, advancing the IOM goals and some fulfilling academic positions.

The Department of Veterans Affairs Quality Scholars (VAQS) launched an innovative interprofessional fellowship program for predoctoral- and postdoctoral (PhD and DNP)-prepared nurses, to participate in scholarship, leadership, education, and research opportunities (Abraham et al., 2021). Scholarly outcomes were identified that included publications, conference presentations, grant submissions, teaching/leading quality improvement, and research initiatives. Most importantly, the VAQS program provided time and mentorship support for practice scholars to partner with research scholars to directly affect the quality of care and outcomes through interprofessional team collaboration. This PhD and DNP collaboration offered the opportunity to strengthen the rigor of science for the discipline of nursing through the application of the knowledge and competencies in quality improvement and research design and methodology (Abraham et al., 2021). Efforts such as this program, which align so clearly with the DNP Essentials, demonstrate that positive practice scholarship outcomes can be observed and measured when organizational opportunities, mentorship, and support are provided.

The nursing profession clearly engages in the scholarship of empirical research and publication. Still, there is a fundamental need to define clinical practice that demonstrates the application and outcomes of nursing practice scholarship. In nursing, scholarship goes beyond traditional publications and presentations and needs to reflect contemporary practice (Peterson & Stevens, 2013). Further evaluation and documentation of innovative nursing practice scholarship outcomes are necessary to support the utilization of DNP-prepared nurse scholars to optimize outcomes for organizations.

## Methods

### Design

The researchers used a cross-sectional design to survey DNP-prepared nurses in practice about their practice scholarship experience. An online survey tool to collect data from graduates of DNP programs currently in practice was used; specific information was gathered to determine (a) frequency of engagement in practice scholarship activities; (b) the relationship between the knowledge gained in DNP programs and the frequency of engagement in practice scholarship; and (c) the relationship between engagement in practice scholarship, work role, and years since graduation with a DNP degree.

### Setting/sample

A convenience sample of 306 DNP-prepared nurses in practice was recruited via a national membership organization for nurses holding a DNP degree; after data cleaning, 269 completed surveys were used in the analysis.

### Procedures

Data were collected using a REDCap (n.d.) electronic survey tool. Five content experts reviewed the survey tool. Ten DNP graduates piloted the survey before it was distributed via the DNP organization's website, social media sites, and email correspondence with follow-up announcements. Institutional Review Board issued an exempt ethics status.

### Instrument

A review of the literature did not identify a validated tool that could be used to meet the aims of this study. Therefore, a researcher-designed survey was developed using constructs from the literature, national nursing organization position statements, and standards of doctoral nursing education. To establish content aligned with examples of practice scholarship from the literature and the AACN DNP Essentials, the survey tool was reviewed by five content experts and revisions were made. Usability and face validity were tested by piloting the tool in 10 DNP alumni located in the northeastern and central regions of the United States (Kesten et al., 2021). The survey included participant demographics, including work role and years since graduation with DNP degree, questions assessing perception of practice scholarship knowledge and competencies gained in DNP programs, and the frequency of engagement in practice scholarship activities.

### Data analysis

Survey data were analyzed using SPSS 26 software and Mplus software version 8 in consultation with a statistician (IBM Corp., 2019; Muthén & Muthén, 2017). The principal investigator verified data to ensure accuracy. Descriptive and inferential statistics were generated for each variable. For continuous variables, the mean, SD, minimum, and maximum were calculated and reported; for categorical variables, frequencies, mean summary scores, and standard deviations were calculated for each item. Correlational analysis was conducted on knowledge gained in the DNP program and engagement in practice scholarship. Exploratory factor analysis (EFA) with categorical indicators and Geomin rotation was carried out separately for the knowledge gained and engagement items using the Mplus software version 8 (Muthén & Muthén, 2017). The number of factors to retain was determined based on the magnitude of eigenvalues and the scree plot. One-way analysis of variance with Tukey honest significant difference (HSD) post hoc analyses were conducted on engagement and pertinent demographic data.

## Results

### Demographics

The sample ( $n = 269$ ) was primarily female (92%), White (77.7%), and represented all regions of the United States with an additional five international participants. Most worked full time (74%), in community settings (35%), acute care settings (31.2%), or academic settings (32.7%), and in direct care APRN roles (47%), academic faculty (25.9%), and indirect roles such as leadership and professional development (17.8%), with a mean 4.6 years of experience since their DNP graduation.

### Engagement in practice scholarship

To evaluate the level of engagement in practice scholarship, the respondents were provided with 32 examples of practice scholarship derived from the literature, national standards, and expert panel. Participants were asked how frequently they had engaged in these practice scholarship activities in the workplace since receiving their DNP degree on a 4-point Likert scale from *rarely* to *very frequently*. The results are described in **Table 2** in order of mean scores.

### Relationship between the knowledge gained in doctor of nursing practice programs and the frequency of engagement in practice scholarship

For the 32 engagement questions, the EFA resulted in five eigenvalues that were greater than 1: 16.69, 2.75, 1.34, 1.10, and 1.09. Because the first eigenvalue was markedly larger than the rest, a one-factor solution was selected. All 32 items had substantial ( $>0.52$ ) standardized loadings onto one factor, further supporting the one-factor solution. The summary score for the frequency of engagement scale was computed by averaging the 32 items. The same process was conducted on the knowledge gained in DNP programs variable with three eigenvalues that were greater than 1: 10.62, 1.44, and 1.15. For the same reason, a one-factor solution was selected. All 18 items had substantial ( $>0.60$ ) standardized loadings onto one factor, further supporting the one-factor solution. A summary score was computed by averaging the 18 items. The relationship between the knowledge gained in the DNP program and frequency of engagement in practice scholarship demonstrated a weak positive correlation, ( $r = 0.375$ ,  $n = 269$ ,  $p < .001$ ). The frequency data and mean scores for each item of knowledge gained from DNP programs are described in **Table 3** in order of mean scores.

### Relationship between engagement in practice scholarship and work role and years since doctor of nursing practice graduation

The relationship between engagement in practice scholarship and work role and years since DNP graduation was examined using the summary score for practice scholarship engagement and categorized primary work

role and years of experience. For primary work role, there was a statistically significant difference between groups as determined by one-way analysis of variance,  $F(2,266) = 10.669$ ,  $p < .001$  (**Table 4**). A Tukey HSD post hoc test revealed that the direct care role engaged in significantly lower practice scholarship,  $M = 2.123$  (0.710), than indirect care,  $M = 2.622$  (0.603),  $p < .001$ , or academic roles,  $M = 2.377$  (0.668),  $p = .018$ . There was no statistically significant difference between the indirect and academic roles,  $p = .103$ . For years of experience, there was a statistically significant difference between experience categories,  $F(3,264) = 2.875$ ,  $p = .037$  (**Table 4**). A Tukey HSD post hoc test revealed that greater than 10 years of experience was the only group that had significantly higher engagement in practice scholarship,  $M = 2.866$  (0.491), than the other experience categories,  $p < .05$ . There were no statistically significant differences between the other categories of experience (1 year or less, 2–5 years, or 6–10 years).

## Discussion

### Frequency of engagement in practice scholarship

Survey respondents indicated the highest frequency of engagement in practice scholarship for *evaluating current clinical knowledge* and *translating current best evidence in practice*, both DNP practice scholarship hallmarks. This is to be expected because these items are beacons of DNP practice scholarship and a DNP graduate's expectation. The items reported the least frequency of engagement included traditional academic scholarship outcomes such as *acting as a primary investigator (PI) in a research study*, *dissemination of policy papers*, and *securing competitive funding*. However, this was an expected finding because the DNP graduate does not typically receive the course work, mentorship, or preparation to engage in these traditional research activities.

It is important to also note that 47% of the respondents were employed in direct care APRN roles. It is well-known that time for these practice scholarship activities is limited in direct care settings, unless negotiated or included explicitly in the job description. Doctor of nursing practice-prepared nurses employed in academia had a higher frequency of engagement than direct care roles; again, because one of the areas of evaluation for academic faculty includes evidence of scholarship, this was an expected finding. These results raise the question of whether we are measuring what matters? Is it advisable to measure practice scholarship outcomes solely against standards of research and academic scholarship? Practice scholarship competencies and outcomes are needed in the practice arena, in acute and primary care to meet the needs of patients, populations, and health systems to meet the Triple Aim [improving the experience of care, improving the health of populations, and reducing per capita costs of health care] (Berwick et al., 2008).

**Table 2. Engagement in practice scholarship (n = 269)**

	Frequently/Very Frequently (Valid %)	Rarely/Occasionally (Valid %)	Mean	SD
Evaluated current clinical knowledge	85.9	14.1	3.3420	0.79301
Translated current best evidence in practice	76.7	23.3	3.1203	0.93597
Evaluated new care delivery strategies	65.5	34.6	2.8609	0.99405
Addressed work environment issues	61.2	38.8	2.8134	1.03979
Mentoring new practice scholars	56.2	43.8	2.7116	1.10840
Conducted a change in practice project	56.4	43.6	2.6466	1.10023
Lead health care teams	55.9	44.2	2.6415	1.19491
Translated research and used evidence to improve health, impact practice, and effect change in health systems	56.2	43.8	2.5849	1.05231
Designed and or implemented new policies at the local, regional, and national level	51.7	48.3	2.5581	1.11019
Consulted and evaluated nursing practice	54.2	45.9	2.5299	1.11638
Conducted systematic review to synthesize evidence to recommend practice change	50.1	49.8	2.4906	1.08751
Designed and implemented new systems of care delivery	48.7	51.3	2.4869	1.08770
Developed patient education materials	49.1	50.9	2.4275	1.11274
Serving as an expert in committees, boards as a practice expert	50	50	2.4179	1.18226
Developed clinical guidelines, innovations, and new program initiatives	46.5	53.5	2.3941	1.10330
Disseminated practice findings at local, regional, and/or national venues	44.1	55.9	2.3688	1.17743
Lead interprofessional teams to improve health care outcomes	44.9	55.1	2.3184	1.16325
Addressed clinical costs	41.1	59	2.2799	1.06706
Addressed staffing issues	39.5	60.4	2.2575	1.13711
Provided expert review for quality improvement projects, articles, and/or texts	44.7	55.2	2.2537	1.15915
Evaluated clinical practice models to transform health care delivery	36.1	63.9	2.1203	1.09225
Analyzed system wide data to evaluate practice patterns	38.3	61.7	2.1165	1.14823
Evaluated and/or reported population health outcomes, satisfaction, and/or cost outcomes	36.1	63.9	2.1165	1.08051
Consulting with health care organizations to build capacity for improving care and/or implementing EBP	33.7	66.3	2.0375	1.12662
Developed clinical practice models to transform health care delivery	29	71	1.9294	1.07491

(continued)



**Table 2. Engagement in practice scholarship (n = 269), continued**

	Frequently/Very Frequently (Valid %)	Rarely/Occasionally (Valid %)	Mean	SD
Using secondary data sets to evaluate health care practices and/or outcomes	28.2	71.8	1.9173	1.02457
Published in peer review journals to influence practice	25.7	74.3	1.8321	1.06606
Lead or partnered in research as primary investigator (PI) or co-PI	24.2	75.7	1.7388	1.08396
Received local or regional awards for contributions from professional group	20.8	79.1	1.6754	1.02909
Received national recognition from peers for expertise, excellence, and innovation in practice	19.4	80.6	1.6269	1.01429
Secured competitive funding to support innovations in practice	16.9	83	1.6113	0.93939
Disseminated policy papers through media	9.4	90.6	1.3558	0.74389
<i>Note: EBP = evidence-based practice; DNP = doctor of nursing practice.</i>				

Benchmarks for practice scholarship focusing on practice outcomes need to be developed for DNP-prepared nurses to determine markers of success. For example, Abraham et al. (2021) proposed next steps to quantify the outcomes of DNP practice scholarship include development of a model for scholarship partnerships with DNP- and PhD-prepared nurses, measurement of interprofessional outcomes that relate to quality improvement, measurement of patient and population clinical outcomes, and the addition of cost/value metrics for ongoing evaluation.

#### **Relationship between knowledge gained in doctor of nursing practice program and engagement in practice scholarship**

Overall, only a weak relationship was identified between perception of knowledge gained in the DNP program and frequency of engagement in practice scholarship. Further studies are needed to validate this finding and to explore the reasons for the discrepancy between high levels of perceived knowledge gained and low frequency of engagement in practice scholarship activities. Engagement in practice scholarship is an opportunity that is dependent on available and supported time, consistent effort, and acquired competencies. The fundamental cornerstones of quality improvement, translation of research, and EBP may be broadly applied across roles and settings. The ability to produce practice scholarship outcomes depends on employers' available resources and the value placed on these outcomes. These results may represent the multiple factors and dynamics

influencing the ability of the DNP-prepared nurse to engage in practice scholarship, including work hours, settings, and role. For example, indirect care providers may be focused on systems and quality outcomes within leadership roles. Direct care providers are likely primarily focused on direct patient care management, and educators mainly concentrated on traditional scholarship activity and dissemination required to achieve promotion and tenure.

#### **Relationship between engagement in practice scholarship and work role**

As outlined in *The Actualized DNP Model* (Burson et al., 2016), the attainment of knowledge and competencies in DNP education is not the sole influencer of applying scholarship in practice. The second component of the model, innovative advanced nursing practice roles, is an action-based critical factor that is needed to realize improved practice outcomes. The model assumes that when organizations value practice scholarship, the opportunities for the DNP-prepared nurse to use acquired doctoral-level competencies of translation of evidence to practice, systems change, and improved quality are more likely to be realized. It is critical to develop academic-practice partnerships to better understand what matters to organizations and how to measure impact. Future studies are recommended to determine what is needed by organizations to positively affect the health care delivery system as well as the health of the populations served. This can guide academia to produce graduates with competencies that are needed and valued in practice. Academic-practice



**Table 3. Knowledge gained in DNP programs (n = 269)**

	Agree/Strongly Agree (Valid %)	Strongly Disagree/Disagree (Valid %)	Mean	SD
Translating research evidence into practice	98.1	1.9	3.7041	0.51161
Synthesizing the literature to identify a solution for a practice issue	97.8	2.2	3.6940	0.53671
Identifying measuring and/or evaluating outcomes	97.8	2.2	3.6171	0.57160
Designing and implementing EBP and research	97.0	3.0	3.6030	0.58784
Conducting a systematic review of literature	96.3	3.7	3.5896	0.60228
Designing and implementing quality improvement	95.4	4.6	3.5856	0.65331
Collaboration and communication in teamwork	95.9	4.1	3.5261	0.61449
Engaging stakeholders in project implementation	95.1	4.9	3.4794	0.61509
Disseminating outcomes of practice scholarship	94.0	6.0	3.4552	0.64321
Collecting data and data analysis	92.2	19	3.4387	0.65858
Leading interprofessional teams in scholarship	93.3	6.7	3.4195	0.65183
Sustaining practice change	92.9	7.1	3.3835	0.67541
Developing and implementing health care policy	86.9	7.8	3.2537	0.73629
Using informatics to affect health and health care delivery	83.6	16.4	3.1978	0.74078
Managing population health	81.3	18.7	3.1343	0.79125
Managing large data sets using informatics	77.9	22.1	3.0861	0.78285
Developing and implementing health care policies local, regional, or national level	75.8	24.2	3.0151	0.78803
Using business and finance skills	56.8	43.2	2.6541	0.87347

*Note: EBP = evidence-based practice; DNP = doctor of nursing practice. The frequency data included in this table are reprinted from Kesten et al. (2021).*

partnerships where academia articulates the added value of the DNP graduate can strengthen opportunities in practice to actualize the DNP competencies learned in educational programs (Abraham et al., 2021).

### Relationship between engagement in practice scholarship and years since graduation with doctor of nursing practice degree

A robust and diverse sample in terms of work role, years of experience, and geographical location was achieved. The average number of years since graduation from a DNP program was 4.6 years. More years of experience since attaining the DNP degree demonstrated advancement in work roles and greater time spent engaging in practice scholarship. Those with greater than 10 years of experience engaged in significantly more practice scholarship than those with less experience. These data may indicate that those in leadership positions and in academia

demonstrate practice scholarship competencies more frequently, possibly due to maturation in the role or due to position description, expectations, and time allotment for such scholarship.

### Limitations

Representativeness of the sample may be a limitation as the APRN roles of certified registered nurse anesthetist, clinical nurse specialist, and certified nurse midwife were not as well represented in the sample. However, this response reflects the largest majority of APRNs as nurse practitioners (NPs). The recruitment strategy through a national membership organization was a strategy to help ensure representation of the sample. Future studies may need focused recruitment for a variety of work roles of DNP-prepared nurses in practice. The length of the survey may have been a deterrent to participation or completion. However, strategies to combat participant fatigue were

**Table 4. Engagement in practice scholarship and work role and years since DNP graduation**

	Primary DNP Work Role			Years of Experience Since DNP			
	Direct Care	Indirect Care	Academic/ Educator	1 Year or Less	2–5 Years	6–10 Years	>10 Years
Practice scholarship engagement, mean (SD)	2.123 <sup>a</sup> (0.710)	2.622 (0.603)	2.377 (0.668)	2.198 (0.718)	2.293 (0.701)	2.288 (0.676)	2.866 <sup>a</sup> (0.491)

*Note: DNP = doctor of nursing practice.*  
<sup>a</sup>*p* < .05 using a one-way analysis of variance with Tukey honest significant difference post hoc analysis.

used, and the option to return to the survey later for completion was offered. Additionally, there was the possibility of bias and recall error associated with self-reports. Finally, the survey did not differentiate between post-baccalaureate DNP graduates from post-master's DNP graduates. The addition of this query in future studies is recommended.

### Implications for nursing

The profession of nursing responded to the call to action from the IOM (2010) and made profound changes in the education of advanced practice nurses to address the major reform needed in the US health care delivery system. The study results highlight the complexity of realizing the impact of the DNP-prepared nurse to influence the practice outcomes for patients, populations, systems, and policy as well as the advancement of the nursing profession. Results demonstrate the underutilization of practice scholarship competencies learned in DNP programs, for application in practice. The following is a call to action for DNP graduates, academia, practice, and the nursing profession.

#### Doctor of nursing practice graduates

It is important for the DNP-prepared graduate nurse to articulate to employers the added practice scholarship competencies achieved through doctoral education and to advocate for time to devote to practice scholarship through job descriptions, performance evaluations, and codesign of innovative practice roles. If time is allocated to the DNP graduate for practice scholarship, quality metrics can be addressed, and value-based reimbursement maximized to advance organizations' strategic goals for redesign of health care delivery to increase access and equity.

#### Academia

Further exploration and definition of practice scholarship in academia is needed, along with dissemination and recognition of practice scholarship outcomes which warrant academic promotion and tenure. Academia must continually reevaluate DNP curricula to prepare graduates

for current and emerging practice trends. As noted by Berwick et al. (2008), improving the US health care system requires simultaneous pursuit of improving the experience of care, improving the health of populations, and reducing per capita costs of health care. An impact on health care costs is more likely to be strengthened if DNP-prepared nurses are fully educated and prepared with these needed competencies. For this reason, all DNP programs should evaluate their curricula to identify and address gaps in the competency area of health care finance as well as population health, policy, and advocacy to reduce health disparities. Programs should ensure that graduates are competent in the use of quality metrics to ensure practice scholarship contributions to health care systems are observed, measured, and documented.

#### Practice

Development of new and strengthening of existing academic-practice partnerships are critical elements to success. Academic-practice partnerships are recommended to continuously evaluate and codesign competencies required to optimize the DNP-prepared nurse's application of practice scholarship.

The level of organizational support of practice scholarship needs further exploration in light of the evidence in the study because direct care roles are engaged in significantly less practice scholarship. In practice, direct care APRNs, such as NPs, have been valued in relation to direct care reimbursement for the number of patients seen in a predominantly fee-for-service environment. However, as reimbursement in health care delivery shifts to value-based reimbursement, practice scholarship for quality improvement will be increasingly important to realize financial incentives and quality care metric improvement based on evidence-based care. The DNP-prepared nurse is uniquely qualified to lead the practice improvements needed to shift to value-based care. The role-based relationship to practice scholarship outcomes was found for nurses in indirect care roles and academia, where time, value, and expectation for scholarly outputs are provided for traditional scholarly dissemination and outcomes.

## Nursing profession

Doctor of nursing practice–prepared nurses have reported that they have achieved the requisite advanced skills and competencies, but now need an opportunity to use what they have learned to affect outcomes in practice settings across the continuum. This is a pivotal point in time for the profession of nursing. If the advantages gained by attainment of a doctoral degree are not leveraged, it will be difficult to discern the value of these advanced practitioners.

Finally, there is a fundamental need to define clinical practice that demonstrates the application and outcomes of nursing practice scholarship (Beeber et al., 2019). The profession of nursing must recognize that the impact associated with practice scholarship goes beyond traditional publications and presentations and move to embrace innovative nursing practice scholarship that optimize outcomes for organizations and demonstrate value to the nursing profession.

## Conclusion

When all components of *The Actualized DNP Model* are addressed and valued in practice, the potential for the DNP-prepared nurse to apply knowledge and competencies in innovative advanced nursing practice roles to affect outcomes at multiple levels is optimized. Ultimately, the utilization of practice scholarship competencies by DNP-prepared practicing nurses positively affects the nursing profession and the ability to improve the health of society.

**Acknowledgments:** *The authors acknowledge a grant from Sigma Theta Tau International, Phi Epsilon Chapter Faculty Grant and Grand Valley State University, Center for Creative Scholarly and Creative Excellence mini grant for funding this study; and Alla Sikorskii for her statistical consultation.*

**Authors' contributions:** *Study design: K. Kesten, D. Conrad, R. Burson, K. Moran, C. Corrigan, and E. Pohl. Data collection: K. Kesten and S. L. Beebe. Data analysis: K. Kesten, S. L. Beebe, and K. Moran. Study supervision: K. Kesten, S. L. Beebe, D. Conrad, R. Burson, K. Moran, C. Corrigan, and A. Manderscheid. Manuscript writing: K. Kesten, D. Conrad, R. Burson, K. Moran, C. Corrigan, S. L. Beebe, E. Pohl, and A. Manderscheid. Critical revisions for important intellectual content: K. Kesten, K. Moran, S. L. Beebe, D. Conrad, and R. Burson.*

**Competing interests:** *The authors report no conflicts of interest.*

## References

Abraham, C., Kleinpell, R., Godwin, K. M., & Dolansky, M. A. (2021). The interprofessional Veterans Affairs Quality Scholars program pre-

- and postdoctoral nurse fellow outcomes. *Nursing Outlook*, 69, 202–211. <https://doi.org/10.1016/j.outlook.2020.09.003>.
- American Association of Colleges of Nursing. (2004). *AACN position statement on the practice doctorate in nursing*. <http://www.aacnnursing.org/News-Information/Position-Statements-White-Papers/Practice-Doctorate>.
- American Association of Colleges of Nursing. (2018, March 26). *Defining scholarship in academic nursing task force consensus position statement*. <https://www.aacnnursing.org/News-Information/Position-Statements-White-Papers/Defining-Scholarship-Nursing>.
- American Association of Colleges of Nursing. (2015). *The Doctor of Nursing practice: Current issues and clarifying recommendations*. <https://www.aacnnursing.org/Portals/42/DNP/DNP-Implementation.pdf>.
- American Association of Colleges of Nursing. (2006). *The essentials of doctoral education for advanced nursing practice*. <http://www.aacn.nche.edu/dnp/Essentials.pdf>.
- Auerbach, D. I., Martsolf, G., Pearson, M. L., Taylor, E. A., Zaydman, A., Muchow, A., Spetz, J., & Dower, C. (2014). *The DNP by 2015: A study of the institutional, political, and professional issues that facilitate or impede establishing a postbaccalaureate Doctor of Nursing practice program*. American Association of Colleges of Nursing. <https://www.aacnnursing.org/Portals/42/DNP/DNP-Study.pdf>.
- Beeber, A. S., Palmer, C., Waldrop, J., Lynn, M. R., & Jones, C. B. (2019). The role of Doctor of Nursing Practice–prepared nurses in practice settings. *Nursing Outlook*, 67, 354–364. <https://doi.org/10.1016/j.outlook.2019.02.006>.
- Berwick, D. M., Nolan, T. W., & Whittington, J. (2008). The triple aim: Care, health, and cost. *Health Affairs*, 27, 759–769. <https://doi.org/10.1377/hlthaff.27.3.759>.
- Bodenheimer, T., & Sinsky, C. (2014). From triple to quadruple aim: Care of the patient requires care of the provider. *Annals of Family Medicine*, 12, 573–576. <https://doi.org/10.1370/afm.1713>.
- Boyer, E. (1990). *Scholarship reconsidered: Priorities for the professoriate*. The Carnegie Foundation for the Advancement of Teaching.
- Broome, M. E., Riner, M. E., & Allam, E. S. (2013). Scholarly publication practices of doctor of nursing practice–prepared nurses. *Journal of Nursing Education*, 52, 429–434. <https://doi.org/10.3928/01484834-20130718-02>.
- Brown, M. A., & Crabtree, K. (2013). The development of practice scholarship in DNP programs: A paradigm shift. *Journal of Professional Nursing*, 29, 330–337. <https://doi.org/10.1016/j.profnurs.2013.08.003>.
- Burson, R., Moran, K., & Conrad, D. (2016). Why hire a DNP? The value-added impact of the practice doctorate. *Journal of Doctoral Nursing Practice*, 9, 152–157. <https://doi.org/10.1891/2380-9418.9.1.152>.
- Burson, R. (2020). Scholarship in practice. In K. Moran, R. Burson, & D. Conrad (Eds.), *The Doctor of Nursing Practice Project: A framework for success* (3rd ed., pp. 39–64). Jones & Bartlett Learning, LLC.
- Council on Accreditation of Nurse Anesthesia Educational Programs. (2019). *White paper scholarly work for practice doctorate nurse anesthesia programs: Current state and guidance report from the white paper on scholarly work special interest group*. <https://www.coacna.org/wp-content/uploads/2020/01/White-Paper-on-Scholarly-Work-Final.pdf>.
- Fiscella, K. (2019). Confronting the post ACA American health crisis: Designing health care for value and equity. *Journal of Ambulatory Care Management*, 42, 202–210.
- Henkel, R. J., & Maryland, P. A. (2015). The risks and rewards of value-based reimbursement. *Frontiers of Health Services Management*, 32, 3–16.
- IBM Corp. (2019). *IBM SPSS Statistics for Macintosh (26.0)*. IBM Corp.
- Institute of Medicine. (2001). *Crossing the quality chasm: A new health system for the twenty-first century*. The National Academies Press.
- Institute of Medicine. (2010). *The future of nursing: Leading change, advancing health*. The National Academies Press.
- Kaplan, L., & Brown, M. A. (2009). Doctor of nursing practice program evaluation and beyond: Capturing the profession's transition to the DNP. *Nursing Education Perspectives*, 30, 362–366.

- Kesten, K., Moran, K., Beebe, S., Conrad, D., Burson, R., Corrigan, C., Manderscheid, A., & Pohl, E. (2021). Drivers for seeking the DNP degree and competencies acquired as reported by nurses in practice. *Journal of the American Association of Nurse Practitioners*. Advance online publication. <https://doi.org/10.1097/JXX.0000000000000593>.
- Limoges, J., Acorn, S., & Osborne, M. (2015). The scholarship of application: Recognizing and promoting nurses' contribution to knowledge development. *The Journal of Continuing Education in Nursing*, 46, 77–82. <https://doi.org/10.3928/00220124-20151217-02>.
- Limoges, J., & Acorn, S. (2016). Transforming practice into clinical scholarship. *Journal of Advanced Nursing*, 72, 747–753. <https://doi.org/10.1111/jan.12881>.
- Melnyk, B. M. (2013). Distinguishing the preparation and roles of Doctor of Philosophy and Doctor of Nursing practice graduates: National implications for academic curricula and health care systems. *Journal of Nursing Education*, 52, 442–443. <https://doi.org/10.3928/01484834-20130719-01>.
- Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide, version 8 [software]*.
- National Academy of Medicine. (2020). The future of nursing 2020–2030. <https://nam.edu/publications/the-future-of-nursing-2020-2030/>.
- National Organization of Nurse Practitioner Faculties. (2016). *White paper: The doctor of nursing practice nurse practitioner clinical scholar*. <https://cdn.ymaws.com/www.nonpf.org/resource/resmgr/docs/ClinicalScholarFINAL2016.pdf>.
- Peterson, K., & Stevens, J. (2013). Integrating the scholarship of practice into the nurse academician portfolio. *Journal of Nursing Education and Practice*, 3, 84–92. <https://doi.org/10.5430/jnep.v3n11p84>.
- Poghosyan, L., & Carthon, J. M. (2017). The untapped potential of the nurse practitioner workforce in reducing health disparities. *Policy, Politics, & Nursing Practice*, 18, 84–94.
- Redman, R. W., Pressler, S. J., Furspan, P., & Potempa, K. (2014). Nurses in the United States with a practice doctorate: Implications for leading in the current context of health care. *Nursing Outlook*, 63, 124–129. <https://doi.org/10.1016/j.outlook.2014.08.003>.
- Research Electronic Data Capture. (n.d.). REDCap: Research Electronic Data Capture. <https://www.project-redcap.org/>.
- Soukup, S. M. (2000). The center for advanced nursing practice evidence-based practice model: Promoting the scholarship of practice. *Nursing Clinics of North America*, 35, 301–309.
- Thompson, M. R., & Barcott, D. S. (2019). The role of the nurse scientist as a knowledge broker. *Journal of Nursing Scholarship*, 51, 26–39. <https://doi.org/10.1111/jnu.12439>.