



Mentoring students engaging in scholarly projects and dissertations in doctoral nursing programs

Kelley M. Anderson, PhD, RN, FNP, CHFNP-K^{a,*},
Maureen Kirkpatrick McLaughlin, PhD, RN-BC, NEA-BC^a, Nancy A. Crowell, PhD^a,
Jane M. Fall-Dickson, PhD, RN^a, Krista A. White, PhD, RN, CCRN-K, CNE^a,
Ella T. Heitzler, PhD, WHNP, FNP, RNC-OB^a,
Karen S. Kesten, DNP, APRN, CCNS, CNE, CCRN-K, FAAN^b,
Edilma L. Yearwood, PhD, PMHCNS-BC, FAAN^a

^aSchool of Nursing & Health Studies, Georgetown University, Washington, DC

^bThe George Washington University School of Nursing, Washington, DC

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ABSTRACT

Background: Doctor of Nursing Practice (DNP) programs in the US have grown exponentially, outnumbering Doctor of Philosophy (PhD) in Nursing programs. Faculty are mentoring increasing numbers of students on DNP projects or PhD dissertations.

Purpose: This descriptive study explored faculty characteristics and examined support, engagement, and outcomes of American Association of Colleges of Nursing member nursing faculty mentoring student DNP projects or PhD dissertations.

Method: A researcher-developed survey tool was emailed to 550 Deans and Program Directors of AACN doctoral programs for distribution to their doctoral faculty. Survey data were analyzed using descriptive statistics.

Findings: 177 DNP and 53 PhD (N=230) program surveys were completed. Faculty described challenges in the mentoring role including: time constraints, workload allocation, resources, faculty role preparation, student readiness, and variability in student outcomes.

Conclusions: Additional dialogue and consensus is required to promote mentoring of students in nursing doctoral programs to ensure rigor of scholarly outcomes.

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Introduction

Historically, the Doctor of Philosophy (PhD) has been the primary terminal degree within the discipline of

nursing. The first doctoral program in nursing was the education doctorate at Teacher's College, Columbia University in 1924. The initial PhD in nursing program was launched at New York University in 1934, followed by the University of Pittsburgh's program in 1954

* Corresponding author: Kelley M. Anderson, School of Nursing & Health Studies, Georgetown University, 3700 Reservoir Road, NW, Washington, DC 20057.

E-mail address: kma25@georgetown.edu (K.M. Anderson).
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(Meleis, 1988). In 1960, Boston University began the Doctor of Nursing Science program, graduating its first cohort in 1963, and in 1964 the University of California started the Doctor of Nursing Science program (Carter, 2013; Meleis, 1988).

In response to current societal needs for additional nursing practice expertise, enrollment has increased in doctoral nursing programs, primarily for the Doctor of Nursing Practice (DNP). The 2004 American Association of Colleges of Nursing (AACN) position statement recommended advanced practice nursing preparation at the doctoral level. This was the impetus for nurses to obtain the practice-focused DNP degree in large numbers. In 2010, there were 1,814 students awarded a nursing doctoral degree with 1,282 DNPs (71%) and 532 PhDs (29%). By 2017, this shift to the DNP widened significantly with 6,090 DNP (88%) and 793 PhD (12%) degrees awarded (AACN, 2017b).

Each doctoral program has both unique and overlapping foci while maintaining nursing practice as foundational for the discipline. PhD and DNP faculty and students may both be nationally certified advanced practice providers with dissertations and scholarly projects derived from the practice setting. The PhD dissertation addresses a gap in nursing science through the generation of new knowledge, while the DNP project is designed to translate the best evidence into practice. Irrespective of program focus, all doctoral nursing students benefit from intentional mentoring by faculty members. The mentorship process is incorporated into the infrastructure and core curriculum as students navigate their doctoral studies and fulfill programmatic requirements, usually including a PhD dissertation or DNP scholarly project (Lewinski et al., 2017).

Mentoring has been described by Johnson (2016) as, "... a personal and reciprocal relationship in which a more experienced faculty member acts as a guide, role model, teacher, and sponsor for a less experienced student or faculty member. A mentor provides the mentee with knowledge, advice, counsel, challenge, and support in the mentee's pursuit of becoming a full member of a particular profession" (p. 23). Recently, professional programs in colleges and universities are intentionally establishing mentoring processes and programs to support student academic success and faculty role development (McBride, Campbell, Woods, & Manson, 2017). It has been noted that PhD students lacking a supportive relationship with any faculty mentor are predisposed to program withdrawal, negative psychosocial experiences, and longer degree completion times (Lewinski et al., 2017). Mentoring is a critical element of the doctoral faculty role to develop the next generation of PhD-educated nurse scientists (Broome & Fairman, 2018) and is included in one of the AACN standards and recommendations for PhD programmatic rigor (2010).

The genesis for this research study evolved during a lively discussion focused on rigor in doctoral education that was co-led by two of the authors (K.M.A. and E.L.Y.) during the 2017 AACN Doctoral Conference in Coronado, California. Key topics of faculty interest included

the importance of mentoring doctoral students and the challenges faculty experienced as they guided students through the doctoral education process, primarily related to the DNP. The attendees were also interested in defining components of an appropriate and impactful doctoral project and related scholarly outcomes. This focus on doctoral project outcomes was viewed as increasingly important due to the rapid proliferation of, and variability seen across DNP programs, with the concurrent decreased enrollment in PhD programs. Lastly, attendees discussed the importance of the rigor of student doctoral scholarly products. Thus, the purpose of this study was two-fold: (a) to explore faculty characteristics associated with mentoring of doctoral students; and (b) examine support for, engagement in, and outcomes of nursing faculty who mentor student DNP projects or PhD dissertations.

Literature Review

Mentoring in the nursing profession has been recognized as a critical reciprocal relationship between mentor and mentee that promotes professional success, self-confidence, and advancement of nursing scholarship (Meier, 2013). Mentoring is a complex undertaking that involves diverse and often simultaneously performed activities including advising, affirming, challenging, coaching, counseling, encouraging, modeling, collaborating, sponsoring, and teaching (Eller, Lev, & Feurer, 2014; Martina, Mutrie, Ward, & Lewis, 2014; White et al., 2018). Faculty mentors enable and engage by providing support and structure for students' creativity during the evidence innovation process and application of evidence (Root, Nuñez, Velasquez, Malloch, & Porter-O'Grady, 2018).

Although numerous authors have addressed components and processes of mentoring, there exists neither a universal definition of mentoring within the context of nursing nor a fully elucidated state-of-the-science regarding mentoring in nursing (Harris, Birk, & Sherman, 2016; Lach, Hertz, Pomeroy, Resnick, & Buckwalter, 2013; Lasater et al., 2014; Lewinski et al., 2017; McBride et al., 2017; Meier, 2013; Nersesian et al., 2019; White et al., 2018). Nursing institutions of higher education have issued recurring, global calls for mentorship-focused scholarship. However, no empirical evidence exists that has definitively demonstrated that one mentoring model is more effective than another (Nowell, Norris, Mrklas, & White, 2017). The perceived importance of the role of the mentor has been elevated in the 21st century, and is now viewed as a "professional responsibility" rather than "a nicety"; a "learned behavior" rather than "instinctive kindness"; a "reciprocal relationship" instead of a "disciple approach"; the use of "multiple mentors and many forms" instead of "only one mentor and one to one"; and requiring "multiple skills" vs. just "one skill" (McBride et al., 2017, p. 306).

Patterns of academic mentoring are changing related to program durations and technology-enhanced learning. Distance mentoring is an emerging phenomenon enabled by technology that links students with faculty guidance and is increasingly common in nursing education and practice (Lach et al., 2013; Lasater et al., 2014). Mentorship experts acknowledge that distance learning has inherent challenges such as limited on-campus time, and diverse locations and time zones of students and faculty (Johnson, 2016).

Mentoring PhD Students

Successful mentoring by faculty is needed in PhD nursing programs across the world (Nersesian et al., 2019). In the United States, the 2010 AACN report, *The Research-Focused Doctoral Program in Nursing: Pathways to Excellence*, endorsed adequate mentorship and dissertation guidance as the PhD graduate, “develops the science, stewards the profession, educates the next generation of nurses, defines its uniqueness and maintains its professional integrity” (p. 2). Established nurse scientists coach and mentor the next generation of PhDs to acquire essential skills to become independent contributors of knowledge development in the profession (Broome & Fairman, 2018). PhD students require guidance to engage thoughtfully in their research, disseminate their results, and work in team science to address complex and emerging issues in health care. Henly et al. (2015) recommended immersion through a research practica experience with the mentor’s research. In addition, AACN (2001) detailed a quality indicator of research-focused doctoral programs that include the faculty creating an environment where mentoring is evident.

Ketefian and Redman (2015) further supported the need for mentoring of PhD nursing students because 80% of these students go into academic teaching and require mentoring to support socialization into the faculty role. Findings from Nersesian et al. (2019) support mentoring, especially since PhD students self-reported their only source of mentoring was obtained from their advisors. Lewinski et al. (2017) described a group peer-mentoring model used by PhD students to augment their formal faculty and individual peer mentoring. Participants reported that this additional informal support facilitated socialization into the PhD student and nurse scientist roles.

Mentoring DNP Students

Faculty advisors are expected to serve as DNP project team leaders for their advisees and as role models, advocates, specialty experts, and mentors (Hande, Beuscher, Allison, & Phillippi, 2017). Intense mentoring and oversight can be challenging for faculty to provide to DNP students due to the rapid increase in the number of programs and students (Roush & Tesoro, 2018). Due to the shorter duration of DNP programs, these students are likely to receive less mentoring time. The

current faculty shortage limits the number of faculty who can serve as mentors for DNP projects, especially DNP prepared faculty who are working full time in academia (Kirkpatrick & Weaver, 2013).

The mentoring role of faculty to promote the rigor of DNP projects is critical. It has been reported that as the DNP degree evolves, questions exist regarding scholarly project rigor (Carlson, Staffileno, & Murphy, 2018). Roush and Tesoro (2018) systematically examined the rigor and value of DNP final scholarly projects by DNP graduates in the United States. Sixty-five DNP scholarly projects were evaluated using the 16 components in the DNP Project Critical Appraisal Tool (DNP-PCAT) with the reported mean total score of 78.21 out of a possible total score of 141 (56%) for all projects. The researchers also reported problems within the DNP projects in all components of the DNP-PCAT including invalid data analysis and the lack of evaluation of implementation and outcomes. A 2011 survey of DNP programs ($N = 130$; response rate 72%) demonstrated wide variation in scholarly requirements (Minnick, Norman & Donaghey, 2013). Root et al. (2018) utilized the DNP Project Assessment Criteria based on the DNP Essentials and the Cybernetic Interface of Innovation and Evidence Model, reporting that 18% of projects evaluated were at the desired level of quality.

Survey results from Udlis and Mancuso (2015) indicated a difference of opinion between PhD-prepared and DNP-prepared survey respondents regarding the contribution to scholarship for the profession. Although DNP-, MSN-, and BSN-prepared participants concurred that the DNP graduate will substantially contribute to nursing scholarship (97%, 70%, and 85%, respectively), only 40% of PhD prepared participants agreed with this survey item ($N = 320$, $p < .001$). Academic programs preparing this new generation of practice scholars must examine the quality of the DNP project to ensure relevance to practice, attention to national guidelines, and the support for innovation in the design and dissemination of the project (Root et al., 2018). Also, it is important to examine the outcomes of the DNP project based on the DNP Essentials of patient and population health, impact of translational science on the practice of nursing, and the sustainability of these practice changes.

Although there are unique issues related to mentoring of PhD and DNP students throughout their academic programs, it is recognized that mentoring is a necessary element in the development of leaders and visionaries prepared to advance and transform the discipline.

Methods

This descriptive study used a survey design, incorporating both quantitative and open-ended questions to evaluate mentoring of doctoral scholarly work by nursing faculty in DNP and PhD programs. This study

excluded questions about the recently available combined PhD + DNP degree, due to the small number of these programs. After initial development, the 55-item survey underwent content expert review from doctoral nursing faculty at the study institution. The survey received minor wording revisions based upon faculty feedback, and was loaded onto an electronic survey platform (SurveyMonkey). The AACN provided the list of available nursing PhD and accredited DNP programs in the United States. From this list, nine external schools were randomly selected to serve as pilot sites. During the pilot phase of the study, participants were provided the opportunity to submit feedback on survey item content, structure, and readability. The pilot survey was open for 2 weeks with one reminder email sent at the 1-week time point. Seven surveys were returned, and minor survey modifications were completed based on reviewer feedback.

The final survey had three sections: (a) preliminary demographic and baseline information; (b) 29-items on DNP scholarly project mentoring; and (c) 26-items on PhD dissertation mentoring. Doctoral nursing faculty were asked to complete the section(s) respective of the type of program in which they mentor students. The survey had an estimated duration of 20–30 min to complete. University institutional review board approval was obtained prior to the start of the entire study, including the pilot evaluation. Potential participants were informed that the survey was voluntary and anonymous, with their survey completion indicating consent to participate in the study.

Inclusion criteria were nursing faculty teaching in an AACN doctoral nursing program and mentoring doctoral nursing students for their DNP projects or PhD dissertations. Emails with the purpose, description of the study, definition of mentoring, and survey link were sent to 550 Deans of AACN Schools of Nursing and Program Directors of doctoral nursing programs in the United States with a request to forward the survey to their doctoral nursing faculty. The survey was open for a total of 17 days. At day 10, one reminder email was sent, and then the survey remained open for an additional week.

Data Analysis

An a priori power analysis using G*Power 3.9.1.2 (Faul, Erdfelder, & Buchner, 2007) produced a minimum sample size of 180 to achieve a power of 0.80 with medium effect size ($d = 0.5$) and $p = .05$. Because the ratio of DNP programs to PhD programs is approximately 3:1, the necessary sample size estimated by group was 138 DNP program respondents and 42 PhD program respondents. The primary study endpoint was to receive adequate return of surveys to achieve statistical power to complete the data analysis and to answer the study purpose. Data analysis was completed using

IBM SPSS (Chicago, IL), version 25; categorical data were analyzed using frequencies and percentages.

Findings

Most faculty completed one program-specific survey, with fewer faculty completing both surveys, DNP and PhD. One hundred and eighty-seven faculty completed surveys for 230 total surveys completed (DNP total = 177; PhD = 53) from faculty mentoring DNP only ($n = 134$), PhD only ($n = 10$), and both DNP and PhD ($n = 43$), thus fulfilling the a priori power analysis for sample size. Due to the distribution of the surveys through deans and program directors, the overall response rate is difficult to estimate.

Characteristics of Respondents

All respondents were nursing faculty members of AACN member institutions who were actively engaged in the mentoring of doctoral nursing students' DNP projects and/or PhD dissertations. The majority of the respondents were employed full time (93%). The highest earned degree varied by program type, the PhD degree was held by 100% of faculty only in PhD programs, 79% of faculty in both programs and 48% of faculty only in DNP programs. Of respondents, 41% teaching only in DNP programs held a DNP degree. Mentoring roles included serving as committee chairs or primary mentors, and/or as a committee member.

Characteristics of the Programs and Mentoring by Type of Doctoral Program

The number of years enrolling students in the programs was reflective of the existence of the DNP and PhD programs. Importantly, data showed that DNP programs' current enrollment was almost double that of PhD programs. The mean number of years enrolling DNP students was 7.5 (SD = 4.3) and the mean number of students currently enrolled in DNP programs was 72.2 (SD = 72.9). The mean number of years of enrolling PhD students was 24.5 (SD = 14.5) and the mean number of students currently enrolled in PhD programs was 37.4 (SD = 27.7).

Faculty served as project chairs or mentors for a mean of 9.0 (SD = 9.4) years and 5.3 (SD = 3.4) years in PhD and DNP programs, respectively. These faculty successfully chaired a mean of 8.2 (SD = 8.4) PhD students and 11.3 (SD = 2.7) DNP students to completion. Currently, respondents are serving as chairs for a mean of 2.5 (SD = 3.3, range = 0–16) PhD students and 4.4 (SD = 4.1, range = 0–21) DNP students and as committee members for a mean of 2.0 (SD = 2.0, range = 0–7) PhD students and 2.9 (SD = 5.1, range = 0–41) DNP students. Respondents reported that a reasonable number of students to be an effective mentor for a PhD student would be a mean of 3.4

(SD = 1.4, range = 1–6) and for DNP students 4.3 (SD = 2.3, range = 1–15), and for student teams 2.3 (SD = 1.8, range = 0–12).

Respondents reported weekly mentoring time per student as a mean of 7.7 hr (SD = 10.5) for PhD and 4.5 hr (SD = 5.1) for DNP, with an average mentoring duration per student of 67 weeks (SD = 49) and 40 weeks (SD = 23) for PhD and DNP, respectively. This represents an average total mentoring time of 516 hr for a PhD student and 180 hr for a DNP student. The number of academic credits applied toward project completion was a mean of 17.3 (SD = 12.4) for PhD and 9.5 (SD = 8.1) for DNP. Group projects were an option in 17.5% of DNP programs and 1.9% of PhD programs.

Respondents reported a variety of mentor or chair assignment methods to doctoral students including being assigned by the program chair, invited by the student, selected by another faculty, faculty self-selected, or other (Table 1). Respondents from both programs reported that mentors were most commonly

assigned by the program chair (PhD 59.6%; DNP 58.2%) followed by an invitation from a student to serve as their mentor (PhD 59.6%; DNP 32.2%).

Although serving as a doctoral committee chair had some form of compensation for 45% of PhD faculty and 59% of DNP faculty, 40% of faculty in both programs reported that this was not accounted for in their workload. Faculty in both programs received compensation primarily in the form of workload teaching credit, with few faculty receiving direct financial compensation for work on a student project. Six (5.8%) DNP faculty indicated they received direct financial compensation compared to two (8%) PhD faculty.

Faculty employment status to chair scholarly work included full-time, part-time, adjunct, and retired faculty. Both programs reported, 93% and 85% for DNP and PhD, respectively, that full-time faculty could chair the scholarly work. In DNP programs, there was a higher percentage of part-time (42%) and adjunct (23%) faculty who could serve as chair. Conversely, 21% of PhD programs allowed retired faculty to serve in this role.

The majority of faculty were required to have special qualifications to mentor PhD (81%) and DNP (73%) students. These qualifications varied by degree. PhD student faculty mentors reported requirements of a PhD, engagement in active research, consistent publication record, funding as a principal investigator, alignment with student substantive or methodological research, prior service as a co-chair or committee member, full time status, graduate faculty status, and tenure-track or tenured faculty. Faculty mentoring DNP students reported the qualifications of a doctoral degree, a DNP or PhD, active clinical practice, advanced practice nurse with national certification, and experience with a change project, quality improvement (QI), patient safety, health policy, program evaluation, as well as, engaged in the topic of inquiry and experience in project mentorship. More than half of PhD faculty (57%) and less DNP faculty (28%) were required to be a committee member prior to serving as the project mentor or dissertation chair.

Although the role of mentor was perceived as important, only 25% of PhD faculty and 22% of DNP faculty reported receiving formal training for the mentoring role for student doctoral work. Training included conference attendance, the AACN Doctoral Education Conference, formal mentoring programs, faculty development through their educational institutions, monthly meetings, written guidelines, workshops, orientation, and self-initiated attendance at conferences and seminars internal and external to their employment setting. A limited number of faculty were currently being mentored for the chair role: 8% in PhD programs; and 4% in DNP programs.

Resources available to faculty mentoring doctoral students included statistical, human, financial, conferences, and policy/procedures/guidelines (Figure 1). Policy, procedures, and guidelines were the most frequently available and used resources. Financial and human resources were the least frequently available and correspondingly the least frequently used. Other

Table 1 – Characteristics of Mentoring and Student Projects (N = 230)

	DNP n = 177 n (%)	PhD n = 53 n (%)
How mentors assigned*		
By program chair	103 (58.2)	31 (59.6)
Invited by student	57 (32.2)	31 (59.6)
Faculty self selects	48 (27.1)	19 (36.5)
Selected by other faculty	15 (8.5)	13 (25.0)
Other	39 (22.0)	10 (19.2)
Special qualifications for mentors required	130 (73.4)	43 (81.1)
Received formal training for mentoring	38 (21.5)	13 (24.5)
Currently being mentored on being chair	14 (7.9)	2 (3.8)
Chairs must first be committee member	49 (27.7)	30 (56.6)
Compensated for serving as chair	104 (58.8)	24 (45.3)
Being chair not accounted for in workload	70 (39.5)	21 (39.6)
Who can chair project?*		
Full-time faculty	165 (93.2)	45 (84.9)
Part-time faculty	75 (42.4)	13 (24.5)
Adjunct faculty	41 (23.2)	3 (5.7)
Retired faculty	20 (11.3)	11 (20.8)
Final project requirements*		
Quality improvement project	147 (83.1)	N/A
Translation of evidence-based project	137 (77.4)	N/A
Manuscript(s) submitted to scholarly journal	47 (26.6)	4 (7.5)
Manuscript(s) accepted by scholarly journal	11 (6.2)	1 (1.9)
Paper presentation	72 (40.7)	1 (1.9)
Dissertation in electronic repository	N/A	26 (49.1)
Other	55 (31.1)	14 (26.4)

* Percentages may add to more than 100% because multiple responses were allowed.

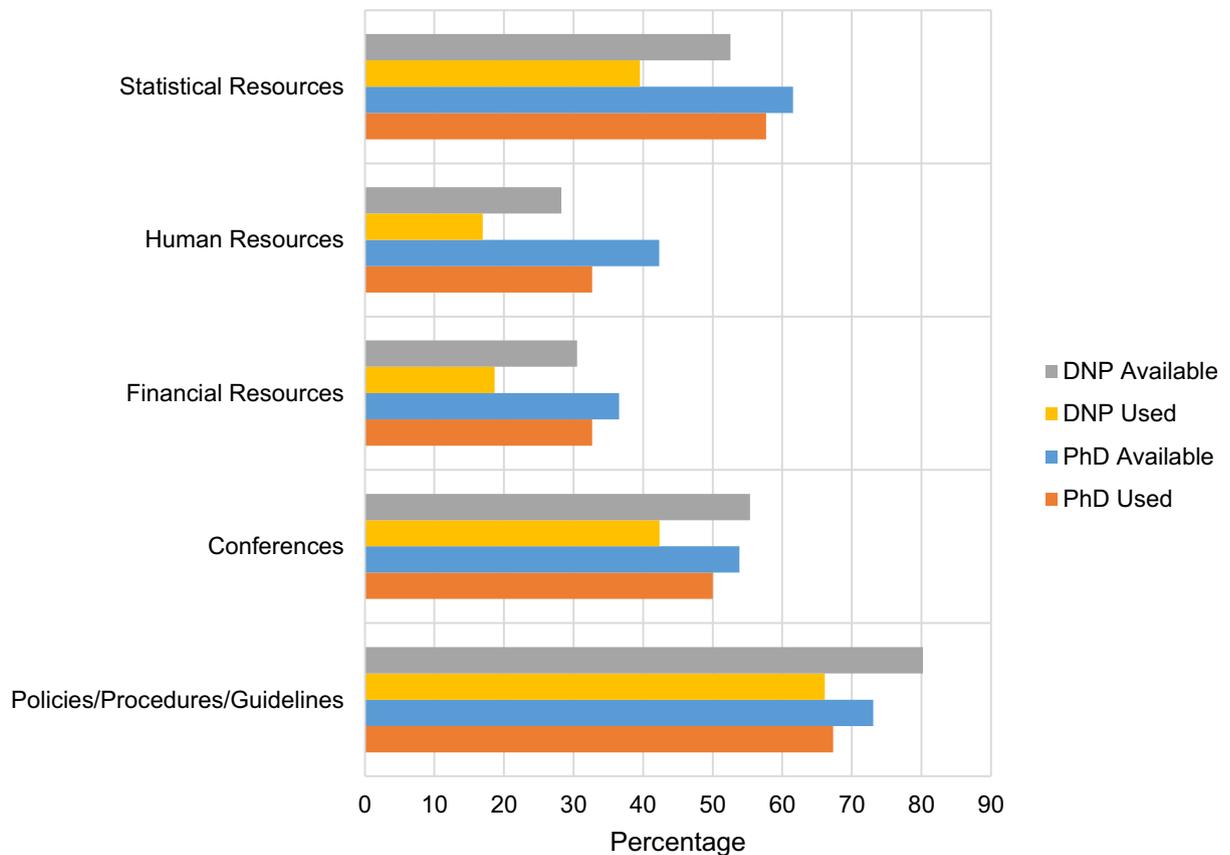


Figure 1 – Resources available to doctoral student and faculty and used by program type.

additional resources were primarily related to scholarly writing support and library access.

Doctoral Student Final Projects

The 2017 AACN White Paper clarified that a minimum requirement for DNP students should include a written report or paper inclusive of an executive summary. In the DNP programs represented in this study, final project requirements were described as QI projects by 83% of the DNP faculty respondents and as translation of evidence-based practice (EBP) by 77%. The majority (70%) described final projects as both QI and EBP. Some respondents (27%) indicated that their students were required to submit a manuscript to a scholarly journal, while 6.2% required manuscript acceptance for publication. Less than half (41%) of the DNP programs required oral paper presentations at local, regional, or national conferences as the project outcome. Other requirements mentioned were a poster presentation, an oral defense, and a scholarly paper.

In PhD programs, about half of the respondents (49%) described a written dissertation uploaded to a dissertation electronic repository as the requirement for the final project. Manuscript submission or acceptance was required by 9% of programs. Only 2% of programs indicated that the final project requirement was presentation at a local, regional, or national conference. The survey inadvertently limited PhD faculty to only

one selection of requirements rather than the multiple selections that were available options for the DNP faculty. Thus, this limits the ability to compare requirements between the two program types.

Faculty were also asked to report the deliverables that had resulted from the work of students for whom they have served as chair or primary mentor. There was a tendency for a higher percentage of PhD faculty to report manuscripts submitted (51%), accepted (51%), and published (53%) than reported by DNP faculty, 42%, 32%, 32%, respectively. PhD faculty (36%) were more likely than DNP faculty (16%) to report the awarding of grant funding, which is more aligned with PhD education and traditional PhD deliverables. Poster submissions, acceptances, and presentations were similarly reported by both PhD and DNP faculty for regional conferences. There was a higher percentage of PhD student poster presentations at national (43%) and international (28%) conferences, compared to DNP students at national (34%) and international conferences (15%).

Results of Open-Ended Survey Questions

Responses to the open-ended questions from all participants were numerous and appeared forthright, and categorized as three main themes—individuals, internal structures, and external structures (Table 2). Common elements were recorded by both the DNP

Table 2 – Factors Supporting and Impeding Faculty Mentoring of PhD and DNP Doctoral Nursing Students

Individuals	Internal Structural Aspects	External Structural Aspects
<p>Faculty</p> <ol style="list-style-type: none"> *Need formal training and guidance for the mentoring role *Not all faculty have experience as committee members before chairing role *Quality of admitted students requires more faculty contact and mentoring Facing faculty shortage in academia Desire to maintain rigor of projects and dissertations Need more research funded PhD faculty to mentor PhD students Need more doctorally prepared faculty in academia Need intentional alignment between faculty research and scholarship and student projects and dissertations Establish collaborative PhD/DNP comentoring models Retain emeritus and retired faculty to serve as project and dissertation mentors <p>Students</p> <ol style="list-style-type: none"> Large number of DNP students and programs during a time of faculty volume constraints Variable quality of students entering all doctoral programs Need more writing and statistical support 	<ol style="list-style-type: none"> *Lack of protected time to adequately mentor students due to high student volume *Clear and transparent policies and guidelines related to workload (chair, member or mentor), compensation and student numbers Need for additional resources (faculty) to reduce faculty to student ratio Variability in workload credit for mentoring doctoral students (some reported not receiving workload credit; some reported it is counted as service) Variability in faculty compensation for serving as project mentor or dissertation chair Number of assigned students impact faculty productivity and preparedness for tenure and promotion Perceived pressure to move students to program completion IRB challenges in understanding DNP projects Low support across both programs for group projects 	<ol style="list-style-type: none"> More access needed for all faculty teaching in doctoral programs to attend doctoral education conferences and faculty development opportunities Focus conferences on mentoring competency and understanding of doctoral nursing education Need for more input and direction from AACN regarding the DNP scholarly product to promote consistency and rigor Need longitudinal outcome data on effectiveness of DNP in changing practice and improving care post-graduation Need scholarship and financial aid resources for PhD students given length of these programs
<p>Note. IRB, institutional review board.</p> <p>* Most cited issues across both PhD and DNP faculty responses.</p>		

and PhD faculty, with some elements specific to program type.

When faculty participants were asked what would facilitate their efforts to be a more effective mentor, similar responses from both DNP and PhD faculty included allocation of time, number of students, readiness of students for doctoral work, need for workload adjustments, and better preparation of faculty for the mentoring role. Time limitation was the most frequent response throughout the data. Faculty felt that competing demands, increased needs of some students, and increased number of students significantly impacted the amount of time available to mentor students. Statements such as, “time,” “other workload,” “10 students for release from one course is a lot,” “5-6 students per course release is more reasonable,” and “the ability to be a more effective mentor would be enhanced with more time and a reduced workload to mentor effectively, along with faculty development on quality improvement design and implementation.” In addition, faculty described that the number of assigned DNP projects or PhD dissertations or committee membership responsibilities impacted their effectiveness as a mentor. One respondent stated, “we have too many students in the program for the number of faculty who are qualified to mentor. Lower

numbers of students and a better mentor-student match would help a lot.” Another respondent commented on the challenges of juggling three groups of students at a time when stating, “you are usually finishing up one group of DNP students, implementing and evaluating with another group, and helping foster idea generation and development with a third, so you are really running three sets of DNP projects at the same time.” A third respondent stated, “I am considering withdrawing from this role because of inadequate preparation.”

Participants shared concerns that newly admitted students lacked adequate preparation for doctoral work, specifically, writing abilities. A respondent stated, “students should take more writing classes before getting started, working with them on APA formatting and organized scientific writing takes up the most time for mentoring.” Another stated, “it’s all contextual, depends on other responsibilities and workload - we are killing our faculty with these projects and because of time constraints and expectations that students should just fly through programs, the projects are problematic . . . from what should be standard for doctoral work.” Faculty also wanted students to have realistic perspectives and expectations of doctoral work. Both faculties identified the need for writing and statistical support for students,

which would facilitate their mentoring abilities. Faculty acknowledged they too required mentoring and faculty development to better respond to multiple academic roles, and to meet diverse student needs.

Different foci were also noted between DNP and PhD faculty. DNP faculty participants responded that the shorter duration of the DNP program prevented effective mentoring with the students and was also a barrier to successful submission and publication of student work. A number of faculty participants stated that they needed more guidance related to their role and preparation to effectively shepherd their DNP students through the program given the perceived variability across programs and recommended additional input and guidance from AACN. Faculty mentoring DNP students stated specific needs including enhancement of institutional review boards understanding of tenets surrounding QI projects; and additional dialogue across DNP programs to compare activities and final deliverables. Of note, respondents also pointed to the continuing need in nursing to increase faculty knowledge about the DNP product and the potential advantages to the profession generally, and nursing scholarship specifically, in having joint DNP/PhD projects beginning at the doctoral education level. Faculty working with PhD students expressed the need for additional resources in the form of financial support (student aid and scholarships) to support students during PhD studies, and resources to allow students to attend relevant student development activities such as conferences and training opportunities.

Discussion

Results from this study suggest that the practices of faculty mentoring doctoral nursing students, specifically their scholarly projects or dissertations, are both evolving and constrained. Faculty in both types of programs report overlapping issues of number of students, student-to-faculty ratios, skill sets of students, time commitments, and workload. Resources are required to support faculty to promote the mentoring process and for students to develop scholarly work. There is a relationship between the mentoring process and the rigor, impact, and quality of the scholarly outcomes. Trends in nursing education will continue to evolve and impact mentoring in doctoral programs.

Supporting the Mentor

The literature and our professional nursing organizations promote the mentoring role. [Lewinsky et al. \(2017\)](#) described mentoring relationships as “critical in creating future nursing scholars” (p. 363). In addition, positive mentoring improves student retention, time to degree completion, and the student experience during this challenging academic endeavor ([Lewinski et](#)

[al., 2017](#)). Our findings suggest that there is low mentoring support for doctoral faculty. Few PhD faculty indicated they had received formal training to guide dissertation mentoring through attendance at conferences, participation in webinars, and guidance from faculty mentors. Between 22% and 25% of respondents had formal mentor training, and only 4%–8% are currently being mentored. This is not aligned with the [AACN \(2010\)](#) recommendation that describes an essential component of successful research-focused doctoral programs as “A sufficient cadre of experienced and well qualified faculty who are being mentored and supported in their scholarship . . .” (p. 6). [Nowell et al. \(2017\)](#) evaluated mentoring programs for academic nursing and suggest key mentoring components include administrative support with a program coordinator, education with an orientation and faculty development workshops, selective dyad matching, and communication and socialization.

Collaboration and Mentoring

One strategy to support mentors is for PhD and DNP prepared faculty to intentionally collaborate in communities of inquiry to advance the profession by cointending ([Carlson, Staffileno, & Murphy, 2018; Staffileno, Murphy, & Carlson, 2016](#)). Collaborating in this manner may facilitate productivity and the speed at which nursing interventions are translated to the bedside ([Trautman, Idzik, Hammersia, & Rosseter, 2018](#)). Faculty from both doctoral degree preparations serving on committees together to guide student scholarship is recommended, as [NLN \(2018\)](#) suggests that differences have the potential to enrich both the academic and practice environments. Almost all responding schools in this survey reported assigning research-active or potentially research-active faculty in both programs as mentors. Schools of nursing need to consider the different roles of DNP and PhD prepared faculty and adjust mentoring practices accordingly ([Agger, Lynn, & Oermann, 2017](#)). A mentoring network versus a single mentoring relationship can be beneficial to prepare mentors, including junior faculty, for their role ([McBride et al., 2017](#)). To maximize faculty and program expertise, AACN has recommended partnerships and consortia among doctoral programs, other nursing institutions, and interprofessional collaborations ([Breslin, 2015](#)).

[Carlson et al. \(2018\)](#) suggested that the role of the second reader can serve as a mechanism to learn the process of scholarly development. However, our findings that only 57% of PhD faculty and 28% of DNP faculty were required to be a committee member prior to serving in the dissertation chair or project mentor role suggest an opportunity to improve upon this mentorship mechanism. A DNP project oversight committee has also been utilized as an opportunity to mentor new faculty into the advisor role ([Nelson et al., 2013](#)). Our findings revealed scholarly project or dissertation chairs with part time and adjunct faculty status was reported more frequent in DNP programs, and that

these faculty, in particular, may significantly benefit from these collaborations.

Workload

Our findings indicated that workload allocation for mentoring scholarly work is not sufficient, with 40% of doctoral faculty indicating that serving as a committee chair is not accounted for in their workload efforts. Much of this effort is credited as service to the department or institution (Nelson et al., 2013), without appreciable increases in resources (Ketefian & Redman, 2015). This is similar to the findings from Minnick et al. (2013) who described 43% of chairs and 85% of committee members without workload credit for mentoring activities. A focus group of doctoral nursing faculty revealed that participants reported increasing workloads when mentoring doctoral student work (Smeltzer, Cantrell, Heverly, Wise, & Jenkinson, 2017). The implications for these findings with the projected increases in DNP programs and students, the long mentoring duration of the PhD, and the overlapping student cohorts require evaluation of workforce equities and sustainability of workload requirements (Nelson et al., 2013). Allocation of workload credits to faculty guiding doctoral students in their scholarship is encouraged when possible and AACN (2010) noted that a barrier to developing a research career is that “mentorship activities are not rewarded by many universities” (p. 29). The evaluation of the costs of DNP programs at many institutions is likely inaccurate due to non-allocation of faculty workload for project oversight (Minnick et al., 2013). Two debatable options regarding workload compensation include faculty coauthoring publications with students to promote their scholarly productivity and remuneration or stipends per students for serving as a mentor.

Promoting Rigor of Doctoral Work

There is a relationship between mentoring practices and the development of impactful, rigorous, and scholarly doctoral outcomes. In addition to mentoring, rigor is promoted through various mechanisms including established national guidelines, faculty qualifications, and scholarly alignment. Differences in the number and type of quality indicators by doctoral degree are appropriate as PhD students are generating novel generalizable information requiring widespread dissemination. DNP students are translating evidence into practice and appropriately communicating results within a practice setting or system; additionally, DNP student projects may be more widely disseminated through publications and presentations.

DNP Rigor and Outcomes

In 2006, AACN developed and published the DNP Essentials, guiding DNP programs' standards and expectations of DNP scholarly projects. In 2015, AACN convened a task force to specify expectations for the DNP project to consist of planning, implementing,

and evaluating practice change by integrating, applying, and synthesizing the DNP Essentials (AACN, 2015). This provided recommendations and clarification, while avoiding being overly prescriptive, to promote programmatic innovations and institutional differences.

Our findings revealed that requirements for DNP mentoring appear to be less aligned with DNP scholarship than with requirements such as having Advanced Practice Registered Nurse certification, maintaining active practice, and holding a doctoral degree. These qualifications are not congruent with educational standards that provide recommendations for DNP mentorship to be consistent with the doctoral degree (Minnick et al., 2013). As suggested in the 2015 AACN White Paper, the recommendation for experience in QI metrics, translational science, EBP, or scholarship track record may improve the rigor of DNP scholarly projects. One explanation may be that although the DNP degree requires interprofessional collaboration and practice expertise of the guiding team, these components may not guarantee an association for scholarly support. In addition, it could be that the faculty who are guiding many of the DNP students do not hold appointments that require scholarship as part of the criteria for advancement in rank.

Although the data from our study suggest variability in expectations for dissemination of scholarly work among DNP graduates, the AACN (2015) White Paper indicated that a published peer-reviewed manuscript may be one example of dissemination. Other forms of dissemination may include executive summaries, webinar presentations, videos, poster abstracts, podium presentations, public presentations, reporting back to the practice organization, abstract, and publication to a nonrefereed lay publication (AACN, 2015). Minnick et al. (2013) described that 25% of DNP programs required a presentation outside of the institution and 48% required submitting a manuscript for publication. Our findings, which revealed that 41% of DNP programs required an external presentation and that 27% required a submission of a manuscript to a scholarly journal, are more congruent with the 25% submissions for publications reported by Nelson et al. (2013) and the 17% single publication rate reported by Minnick, Kleinpell, and Allison (2019). Minnick et al. (2019) reported that 60% of DNP graduates indicated their publication experience was only related to their DNP project. These findings may be a reflection of the respondents surveyed and/or the changing trends in DNP scholarly dissemination.

As the DNP degree evolves, more discussion is taking place at the national level about the evaluation of the scholarly projects for rigor and consistency. Our findings support faculty voicing the need for more consistent processes and tools to be utilized in mentoring DNP scholarly projects and for dissemination requirements. Established tools to consider include Standards for Quality Improvement Reporting Excellence (SQUIRE) for QI projects; Standards for Reporting

Implementation Studies (StaRi) for implementation studies; and International Appraisal of Guidelines, Research and Evaluation II (AGREEII) for clinical practice guidelines. Nursing is also developing metrics to evaluate DNP projects meeting AACN Essentials, including the criteria EC as PIE, which includes Enhances; Culmination; Partnership; Implements; Evaluates (Waldrop, Caruso, Fuchs & Hypes, 2014). If all five components of the PIE are met, then the authors suggest that this would be a quality DNP project. Other guides include the DNP Project Assessment Criteria (Root et al., 2018) and the DNP-PCAT, DNP Project Critical Appraisal Tool, based on AACN Essentials, SQUIRE and StaRi SQUIRE & StaRi guidelines (Roush & Tesoro, 2018). Institutional efforts, including academic review committees for DNP projects (Nelson et al., 2013) are operationalized in some settings. As a practice doctorate, the evidence that the DNP is changing practice for better outcomes will continue to evolve.

PhD Rigor and Outcomes

AACN (2001) clearly defines programmatic outcomes for the PhD including a dissertation, which represents original scholarship. The AACN's document *Pathways to Excellence* (2010) provides a mechanism for self-evaluation of PhD programs for quality. On a national and interdisciplinary level, the National Research Council (2010) of the document *A Data-Based Assessment of Research-Doctorate Programs in the United States* compiled data from 5,000 doctoral programs in 62 fields at 212 universities to compare, evaluate, and improve programs. As the AACN document is almost a decade old, PhD program faculty would benefit from an evaluation and update of this document to promote rigor and quality of contemporary PhD programs.

Respondents in our study requested additional structure and requirements throughout the mentoring process in PhD programs. This may be due to the longer programmatic duration of the PhD in nursing or a reflection that the PhD is a terminal degree that crosses many disciplines and has been in existence for a substantial period of time. PhD faculty indicated a desire for more structure with policies and procedures, increased financial support for students, and requirements for mentors that align with a dissertation (i.e., active research, PhD, full-time, tenure). Pairing of faculty mentors with students in PhD programs appears aligned with research interests and scholarly work, and consistent with recommendations from the AACN's *Pathways to Excellence* (2010) to promote adequate mentorship and dissertation guidance.

In the AACN (2010) document regarding indicators of quality for the PhD, students are expected to establish a pattern of productive scholarship resulting in presentations and publications. Approximately 50% of our PhD faculty respondents reported that manuscripts were submitted, accepted, and published related to the dissertation. In addition, posters were presented at regional, national, and international conferences at 45%, 43%, and 28%, respectively. Grants were awarded

to 36% of students chaired and mentored during their PhD studies. Ellenbecker, Nwosu, Zhang, and Leveille (2017) evaluated alumni outcomes after completion of the PhD degree and noted 28% of respondents met their criteria of external funding and successful publication record. Predictors of funding and publication success were attributable to postdoctoral training, less than 12 hr/week of work during PhD studies, research assistant experience, in person program, younger age at graduation, and conference presentation experience (Ellenbecker et al., 2017).

The Shifting Landscape of Doctoral Nursing Education

Trends in nursing doctoral education impacting faculty and students are changing and will continue to evolve.

Faculty trends

Fang and Kesten (2017) published the AACN survey data indicating that 16% of faculty hold the DNP degree in comparison to 56% of faculty with the PhD degree. Recent AACN survey data from 2018, representing 886 schools of nursing indicated that 20.3% of faculty hold the DNP degree in comparison to 36.5% of faculty with the PhD degree, and 43.2% non-doctorally prepared (AACN, 2018a). These data are for all schools of nursing and not specific to schools offering solely graduate or doctoral level of instruction; however, there is a trend to the increasing composition of faculty with a DNP degree with a simultaneous decrease in PhD prepared faculty. Our findings demonstrate that the DNP degree was held by 41% of faculty respondents of DNP only programs and 19% of faculty in both DNP and PhD programs.

Fang and Kesten (2017) projected that total nursing faculty retirements in 2016–2025 would equal one third of the 2015 faculty workforce. Retirees are likely to come from faculty aged 60 or older, and faculty aged 50–59 are likely to serve as their replacements. The impact of retiring faculty will be significant given their over-representation as those faculty holding doctoral degrees, obtaining a senior rank, and having the ability for graduate-level teaching (Fang & Kesten 2017). Ideally, the faculty who teach doctoral students are senior faculty and productive in research (Smeltzer et al., 2017). The demands on current faculty due to retirements and an increasing number of students “create challenges for programs to provide ... high level of mentoring” (Roush & Tesoro, 2018, p. 437). Approximately 21% of PhD faculty in our study reported retired faculty can serve as a dissertation chair. Facilitating this opportunity in light of projected retirements may retain the experience of these more seasoned faculty members. Fang and Kesten (2017) recommended implementing a phased or part-time position that would benefit programs in three ways: (a) retain the experience of more experienced faculty members; (b) preserve academic wisdom; and (c) promote succession planning from retiring to junior faculty.

The national nurse faculty vacancy rate is 8%, with 91% of those vacancies for positions requiring or preferring a doctoral degree (AACN, 2017c). There is a sense of urgency for the nursing education community to address the impending exodus of senior faculty and to develop junior faculty, especially in the mentoring role, implementing novel approaches to retain retiring faculty for purposes of mentoring doctoral work, and building a network of nationally available faculty.

Our findings indicate that DNP-prepared faculty are currently serving as a primary mentor and committee member for a mean of 4.4 and 2.9 students (7.3 total), respectively. PhD faculty are serving as a primary mentor and committee member for 2.5 and 2.0 (4.5 total), respectively. The 2001 AACN paper on indicators of quality research-focused doctoral programs recommend that a faculty should serve as a primary advisor or chair for no more than 3–5 students in the dissertation phase. Our findings are consistent with this recommendation; however, there is variability across PhD programs, with a range of 0–16 students for primary mentors, and 0–7 for committee members. There are no established guidelines for the number of primary mentorship roles for DNP faculty, and our results showed a range from 0 to 21 (with 94.5% reporting 0–12) students for primary mentors and a range of 0–41 (with 97.2% reporting 0–12) as committee members, indicating a wide variance and needed recommendations to guide the number of students that can be mentored in this manner.

Preparation of faculty to meet these evolving challenges of mentorship will require both PhD and DNP prepared faculty to engage in coursework regarding pedagogy. The [National League for Nursing \(2013\)](#) states that “it is critical that doctoral programs in nursing, including both research and practice doctorates, prepare graduates with the knowledge and skills to teach...” (NLN, 2013, p. 1). AACN recommends that both PhD and DNP graduates take additional coursework in pedagogy to prepare for an academic role, stating that neither curriculum implicitly includes such pedagogy. [Minnick et al. \(2013\)](#) described that only 5% of DNP programs had a requirement for a teaching practicum. However, AACN has clearly delineated the DNP degree for advanced nursing practice, with nursing education separate from their definition of advanced nursing practice.

Due to increased enrollment in DNP programs and the shorter duration of study, the number of qualified faculty guiding DNP scholarly projects may proportionally increase to accommodate mentoring a larger number of future students. Younger faculty are more likely to have earned a DNP degree, and less likely to have a research-focused doctoral degree, senior academic rank, or teach at the graduate level ([Fang & Kes-ten, 2017](#)). In a survey of 843 DNP students, [Fang and Bednash \(2017\)](#) reported 32% of respondents intended to pursue an academic career following graduation. The goal of the DNP program was originally, and continues to be, the advancement of practice to improve

health care; however, many of these graduates pursue faculty positions ([Ketefian & Redman, 2015](#)). [Frederickson and Feldman \(2018\)](#) suggested that as DNP prepared faculty enter academia, they may be removed from their intended purpose to impact direct and indirect patient care.

Student Trends

AACN’s 2018 annual report documents 138 PhD programs with a student enrollment of 4,600, and a recent peak enrollment of nearly 5,300 students in 2014 ([AACN, 2018b](#)). Enhanced student demand for the practice doctorate and institutional financial incentives are major drivers in the growth of DNP programs. Currently, there are more than 344 DNP programs in the United States with more programs opening each year and over 29,000 students currently enrolled ([AACN, 2018b](#)). Increasing enrollment and graduation rates of DNP programs is occurring simultaneously with increasing numbers of faculty retirements, which will compound the difficulty of ensuring sufficient faculty to guide doctoral students in their scholarship. In addition, increased enrollment is more evident in BSN to DNP programs, while MSN to DNP program enrollment is declining ([AACN, 2017](#)). The BSN to DNP student will require additional and a longer duration of mentoring with faculty for both the practice role and scholarship, including scholarly writing.

A novel finding was that our respondents voiced concern about the admission of less qualified students for doctoral studies who require additional faculty mentoring. As [Roush and Tesoro \(2018\)](#) state “With this growth comes a responsibility to ensure that DNP programs are universally providing the quality of education, mentoring, and practice oversight . . . to fulfill the purpose of the DNP degree” (p. 437).

Future Directions

Results from this survey have generated additional questions to be examined in future studies designed to inform our collective professional work. Doctoral programs in nursing require deliberation and evidence to guide future directions to sustain and advance the profession. Future opportunities include the evaluation of doctoral quality indicators, to track results and outcomes, vital to our profession. Additional studies could evaluate the outcomes and utilization of the DNP degree postgraduation, including the number of graduates entering academia, and the impact of DNP practice on patient outcomes in acute and community settings. A time trial of faculty mentoring activities required for completion of their student’s dissertations and scholarly projects would inform workload requirements and the allocation of faculty effort. As many programs adopt a distance education format, studies may examine related mentoring practices. Lastly, future studies may explore best practices for effective

mentorship to support the next generation of doctoral nursing students. Evidence-based, targeted strategies are needed to support faculty in their mentoring roles, including providing guidance regarding appropriate number of student projects mentored.

Limitations

There are limitations to this study. The number of potential respondents is unknown; the survey was sent to Deans and Program Directors of AACN doctoral nursing programs, with a request that they forward to doctoral nursing faculty. This limits our ability to know how many potential respondents received the survey, and the corresponding percentage of respondents who completed the survey. The inability to determine a survey response rate, and the potential that the sample may represent a specific subset of doctoral faculty, and thus, representativeness, limits the generalizability of the results. Requesting the age of the respondents and number of years as a nurse educator would have increased our knowledge regarding characteristics of those individuals who completed the survey. There were a few limitations in the survey. Twelve participants were mentoring doctoral students, although not teaching in the program, and thus, they did not complete the survey. There were electronic programming problems for two questions: in one question, participants were unable to answer; and another question did not allow multiple responses as originally designed. Lastly, 47 respondents completed the demographic component, and then stopped responding. Of the 234 eligible participants, these 47 individuals represented 20.1% of the potential respondents, and it is unclear if they completed the survey at a later time or did not complete the survey, and what the reason was for noncompletion.

Conclusion

Doctoral nursing programs have undergone tremendous shifts and will continue to do so for the foreseeable future. Mentoring will remain an integral component of doctoral education with two terminal degrees in the profession. Understanding the current challenges facilitates the opportunities to improve the faculty mentoring practices for future doctoral nursing students in their scholarly work.

Supplementary materials

Supplementary material associated with this article can be found in the online version at doi:[10.1016/j.outlook.2019.06.021](https://doi.org/10.1016/j.outlook.2019.06.021).

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