

Research into an Entry-Level Doctorate Across Four Healthcare Professions

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An Annotated Bibliography

November 2020



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Letter from the AAPA

Dear Readers,

In May 2019, the AAPA Board of Directors assigned the Commission on Research and Strategic Initiatives (RSI) to conduct a literature review on the impact that transitioning to an entry-level doctorate has had on other health professions (e.g. physical therapists, nurse practitioners, pharmacists). Over the next 12 months, the RSI conducted a detailed literature review to address what the PA profession can learn from other health professions that have made similar transitions to the doctorate (physical therapy, pharmacy, nurse practitioners). One of the outcomes of this literature review is this annotated bibliography. We hope that this information can provide greater insight into what is already known and provide direction for future research.

Special thank you to Derek Henderson, Research Data Coordinator, for his support creating the final white paper.

Sincerely,

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Executive Summary

In the last few decades, several health professions have adopted entry-to-practice doctoral degrees as the new educational standard. However, the PA profession in 2009 rejected the entry-level doctorate and endorsed the master's degree as the entry-level and terminal degree for the profession. With the recent onset of PA-specific post-professional doctoral degree offerings, the debate on the entry-level doctorates has resurfaced. It is time for the profession to create an organized strategy on the next evolution of PA education that will ensure continued professional viability while upholding professional integrity.

In May 2019, the American Academy of PAs (AAPA) Board of Directors (BOD) charged the Commission on Research and Strategic Initiatives (RSI) with reviewing HP-3200.1.4:

“AAPA opposes the entry-level doctorate for PAs.” [Adopted 2010, reaffirmed 2015].

Corresponding to this five-year policy review, RSI was also charged to:

“Conduct a literature review on the impact that transitioning to an entry-level doctorate has had on other health professions (e.g. physical therapists, nurse practitioners, pharmacists) and examine data from AAPA surveys on degrees earned, compensation, student debt and other factors to inform the 5-year policy review of AAPA’s opposition to the entry-level doctorate for PAs (HP-3200.1.4) “

Methodology

Defining the scope

Three comparative health professions were cited within the RSI charges which RSI felt provided enough comparative context for the project. The four professions included within the literature review included:

- a) Physical therapist (DPT)
- b) Nurse practitioner (DNP)
- c) Pharmacist (PharmD)
- d) Physician Assistant (MPAS)

The commission then developed a set of terms that were consistently utilized¹:

Doctorate: The highest award a student can earn for graduate study. *This term is used in any field of study.*

Professional doctorate: This is a doctoral degree conferred on “completion of a program providing the knowledge and skills for the recognition, credential, or license required for professional practice” and may be an entry level for the profession or obtained after the professional degree (National Center for Education Statistics, 2015). The total preprofessional and professional length of study is at least six years. Examples include the DNP, DPT, PharmD, DO, and MD.

Postprofessional doctorate: This is a doctoral degree earned after obtaining a professional credential. For example, a PA can obtain a postprofessional DHS(c), EdD, DrPH, PhD.

Clinical doctorate: This refers to a professional doctorate, which includes clinical study, and is most commonly the entry-level degree for the profession. Examples include the MD, DO, and DDS.

Postprofessional clinical doctorate: This refers to a professional doctorate, which includes advanced clinical study (such as clinical specialization) obtained after obtaining a professional credential. Examples include the DSc-PA, DMS(c), and the DPA.

Dual degree: This refers to degree programs in which students are completing course work to obtain two degrees in simultaneously. Examples include the PharmD/MBA and the MPAS/MPH.

Search procedure

Database: PubMed was used for the searches.

Time: 1990 to present

Language: English only

Location: United States only

Search terms:

[Profession name] + doctorate

[Profession name] + doctoral

[Profession name] + doctorate + outcomes

[Profession name] + doctorate + diversity

As the authors read through each resulting article, references were noted and added as needed.

1. Adapted from Kibe, LW and Cawley, JF. Doctoral Education for Physician Assistants. In: Kayingo, G and Hass, VM, eds. The Health Professions Educator: A Practical Guide for New and Established Faculty. New York, NY: Springer Publishing Company; 2018.

Only articles that were research based were included in the bibliography. Formative commentaries were included as well. Letters to the editor and non-formative commentaries were not included within the bibliography.

Review procedure

Each article was first scanned for relevance to the RSI charges. If the article was selected, it was first given keywords. Each article was then summarized to assess the purpose and the findings.

What did we learn?

The three comparative professions, nursing, physical therapy, and pharmacy, each introduced transitional bachelor's-to-doctorate or master's-to-doctorate paths before moving to entry-level doctorates. In this process, their respective national organizations have standardized the professional doctorate. The move from a bachelor's- or master's- to-doctorate did not happen quickly. Rather it took the pharmacy profession 50 years to make the transition to the entry-level doctorate. The physical therapy profession took 22 years for the same transition. And finally, the nursing profession took a "scant" 14 years to transition nurse practitioners to the entry-level doctorate.

The movement to a doctorate appears to be made with the expectation that it would increase both the professional perceptions and an acknowledgement that the breadth of the training at the master's level was greater than the average master's degree. Yet, for the pharmacist and the nurse practitioner professions, the entry-level doctorate is not always seen as enough. In pharmacy, there is a great deal of research on the pharmacy students acquiring dual degrees, particularly in the past decade. The dual degree combination most studied appears to be the PharmD and the MBA. For nurse practitioners, NPs are seeking additional postgraduate training, rather than seeking an additional degree. Regardless some may see this pattern of "degree creep" continuing, despite the professions having moved to the entry-level doctorate.

The core competencies of the DNP center around advanced practice, evidence-based practice, organizational and systems leadership, clinical scholarship, interprofessional collaboration, population health, healthcare policy, and health informatics. For the DPT, the core competencies center around advanced patient care, interpersonal relationships, teaching and learning, research, administration, and consultation. Finally, for the PharmD, the core competencies center around foundational knowledge, scientific

communication, research, education, leadership management, and personal and professional development. To date, scant research has been done on the PA doctorate.

Over the past several years, commentaries, but scant research, posit that the entry-level doctorate for NP is not adequate to clinically prepare NPs.

Furthermore, there is concern that the move to the DNP is causing a shortage of clinicians as the DNP may prepare more providers for leadership and healthcare administration rather than for practice. Similar commentaries were not identified for either the pharmacy or the physical therapy professions. Both professions have less competition within the marketplace, unlike NPs who may be competing with PAs, MDs, DOs, and more for the same positions. As such a more critical eye may be turned to the NPs.

Finally, there was a lack of research on how the move to the entry-level doctorate impacted the diversity of the profession, debt obtained, or increase in compensation pursuant to obtaining the degree. Moreover, there was little to highlight how the additional degree impacted the marketability of the individual professional in a competitive healthcare marketplace, especially when compared to their peers with a lower degree. Perhaps most importantly, there was a lack of evidence exhibiting whether patients benefit from NPs, pharmacists, and physical therapists with a doctorate versus a bachelor's or master's degree.

What concerns remain and what research is needed?

The [PA Clinical Doctorate Summit](#) was held in March 2009. Since that time, very little has been done to advance our knowledge on the entry-level doctorate. In 2015 AAPA put forth policy that opposed the entry-level doctorate. In 2017, attention was finally given to this topic and research is slowly being published. The following are the areas for future exploration, meant to resolve concerns and provide insights into the impact of the terminal degree for PAs.

1. Terminal Degree

- 1.1. Should the terminal degree for PAs be at the master's level with option post-professional doctoral or should it be an entry-level doctorate or both?
- 1.2. Which organization should be responsible for standardized curriculum and accreditation? If there is an option post-professional doctorate, should it be under ARC-PA?

2. *Fellowships and Residencies*

- 2.1. What is the purpose and role of fellowships and residencies in PA training now as well as if the profession adopts a doctorate?
- 2.2. Should fellowships and residencies be required for those receiving a doctorate?
- 2.3. What should be the rigor of a fellowship or residency for those receiving a doctorate? Should their employment be considered adequate or should a fellowship or residency be more rigorous?
- 2.4. How will this impact the original intent of the profession to be in primary care which was what the profession was created for?

3. *PA-Professional Doctorate*

- 3.1. What are the differentiating factors related to the different PA-professional doctorates? What are the associated competencies for each of the different types?
- 3.2. Do patients, PAs, or employers have better outcomes when the PA has a doctorate?
- 3.3. What is the utility of the doctorate for PAs, including clinical, research, educational utility, leadership, and health policy? Should there be different degrees for each of the areas? Should one degree be adequate, with or without specialization?
- 3.4. Should standardization of the degree programs' length, curriculum, and the degree name be instituted? If standardization is mandated, who should set and enforce the standards?
- 3.5. Will the move to the entry-level doctorate require increased clinical specialization, which was a recommendation for the move to the DNP?

4. *Financial implications*

- 4.1. What is the cost of the doctorate in terms of the cost of education in terms of a PA being removed from the workforce? What is the cost to the PA, to the employer, and to the healthcare systems?
- 4.2. What is the cost to organizations in terms of marketing, educational, advocacy materials, etc. the change to the entry-level doctorate? This will impact the professional associations, PA programs, curriculum developers, etc.
- 4.3. What is the return on investment (ROI) of a doctorate for PAs?
 - 4.3.1. Does compensation change for those with a doctorate?
 - 4.3.2. Are PAs offered expanded opportunities, such as leadership positions, when they hold a doctorate?
- 4.4. Will the public and private payers need to change the reimbursement rates for PAs with a doctorate? Who will shoulder the cost?

5. *Impact on the Workforce*

- 5.1. What is the impact of PAs leaving the workforce to pursue their doctorate and if they take on leadership roles and move away from clinical care? Will existing shortages cause greater waiting times?
- 5.2. Will there be an increasing focus on specialization and therefore less flexibility/movement? Will there be a decrease on primary care or in underserved areas, particular for the PAs who incurred higher debt to pay for the doctorate?
- 5.3. Will physicians and healthcare administrators be more likely to accept a PA as a qualified and competent clinician if they have obtained a doctorate? Will this impact the PA commitment to team-based care?

6. *Impact on Patient Experiences*

- 6.1. Will the quality of patient care improve when the PA receives a doctorate?
- 6.2. Will patients have role confusion when most/all their providers have a doctorate, and may be conferred the title of “doctor”?
- 6.3. Will patients be more likely to accept the care from a PA if they have obtained a doctorate?

7. *Leadership*

- 7.1. Does a doctorate offer greater opportunities for PAs in clinical leadership? What barriers would still exist?
- 7.2. Do PAs have an interest in clinical leadership? What training would the doctorate need to include that would prepare a PAs for this work? Is the training effective?
- 7.3. Will PAs face competition with NPs with a DNP for clinical leadership roles? Will this cause tensions among the professions?

8. *Impact on Education*

- 8.1. What knowledge and skill gaps among PA clinicians might be addressed by postgraduate doctoral preparation?
- 8.2. Will there be a lack of faculty to teach at that level? Will the additional degrees improve PA education as well as educators' capacity to teach?
- 8.3. Are there supports in place to allow student research to be successful? This may include PA research mentors, curriculum, funding, survey dissemination; are there models in place to allow research to be replicated, and other research resources?
- 8.4. What is the cost to educational institutions to adapt their program to provide the curriculum at the doctoral level?
- 8.5. What would the competencies entail for establishing an entry-level doctorate?

8.6. How long will PA programs need to be extended to cover the additional content required for a doctorate? How does the profession differentiate this extended training in comparison to medical education for physicians?

9. *Research and Scholarship*

9.1. Will the PA doctorate be the catalyst for increased research and scholarship on the impact of the PA profession on healthcare?

9.2. What is the PA role for clinical, health systems, and education research?

9.3. Will the doctorate increase PAs' abilities to successfully seek grant funding and engage in research?

10. *Diversity, Equality, and Inclusion*

10.1. Will the additional education serve as a barrier to potential students and potentially reduce the diversity of the profession? Considerations for many different areas of diversity should be included such as, but not limited to:

10.1.1. Race/Ethnicity

10.1.2. Gender

10.1.3. Cognitive

10.1.4. Diversity in terms of past experiences

10.1.4.1. Socioeconomic status

10.1.4.2. Disabilities

10.1.4.3. Age/experience

11. *Other professional issues*

11.1. Should the PA profession be concerned with "degree creep" wherein the highest degree is no longer enough and additional degrees and/or training will be needed? What will competence look like to prevent this from happening?

11.2. Will the need for a doctorate, including potentially leading PAs to have to return for more education, impact their satisfaction with the profession and/or impact levels of burnout?

11.3. Will the transition to an entry-level doctorate have an impact on the PA profession's standing among other healthcare professions? What is effective at mitigating these impacts? Is the same true within employer organizations?

11.4. How will licensure be impacted if the PA profession moves to an entry-level doctorate? What legislative changes may be needed to support the profession at this level? Is there an effective advocacy workforce to support this?

- 11.5. Is there a threshold wherein PAs may be grandfathered in to not need a doctorate degree? What is that threshold and is it grounded in research?
- 11.6. How will the move to an entry-level doctorate impact Optimal Team Practice?
- 11.7. Does the title “physician assistant” reflect a healthcare professional with doctoral level training? If not, what is a more appropriate title? What are the downstream effects of a new title to PAs, their patients, employers, healthcare systems, educational programs, providers of PA materials (education, training, recognitions, etc.), legislatures, and more?

What are the next steps?

In 2020, PAEA showed its commitment to research and to understanding this highly complex, often emotionally laden topic. Providing small awards to five research teams, they gave the impetus for researchers to explore both existing and new data to shed insights into the issue. The research team examined PAs, PA students, and educators. Across four studies it appears that there remains disagreement within the profession about whether the terminal degree should be at the master’s or doctorate level. The fifth study looked at what the cost may be to increase the schooling along with how postprofessional doctorate program enrollment was fairing.

More research is still needed if the profession is to use grounded theory to determine if the move of the terminal degree for PAs from the master’s degree to a doctorate is warranted. PAs have spoken up in surveys, in focus groups, and on social media, making it clear that most have mixed feelings about the issue. More attention must be given to this topic.

Final conclusions

Over the past 10 years, since the last PA Education Summit, little research on the entry-level doctorate has emerged. Without clear organizational support and a strong research foundation, there is risk that the proliferation of postprofessional doctorate programs will continue. Some have expressed concern that PA programs may even offer entry-level doctorate programs in the future. Without organizational input, the profession runs the risk of losing control of establishing core competencies and the ability to guide the movement of the PA education.

Commentaries


Commentaries are written opinion pieces from leaders within the field they are writing about. While commentaries lack generalizability, such as research provides, they may shed light on how topics are perceived. The following summary of the commentaries on the PA, Pharmacist, and NP professions move from undergraduate/graduate level training to doctorate level training reflect the opinions of leaders from 1990 through 2019.

Summary


Overtime, there has been a call for increased education for entry-level access to a profession. It has gone from the master's to the doctorate (pharmacists and NPs) to postgraduate residencies (pharmacists and NPs) to even dual degrees (pharmacists). There is less concern with the pharmacist training than for NPs. The concern is that the increased degree is not preparing NPs to be clinically prepared and may be causing a shortage of clinicians as the degrees prepare the NPs for leadership and healthcare administration and not for practice. As far back as 2004, some authors were even warning that the degrees may be derived from programs seeking more ways to encourage enrollment and not because of the need for more education for the profession.

Narrative Timeline

1990


 The first commentaries are seen looking at the move to an entry-level doctorate for pharmacists (PharmD). Authors express the need to move carefully and thoughtfully. ([Gans, 1990](#)) ([Martin, 1990](#))

2000

 The PA profession is evaluating the merit of postgraduate programs for PAs. The PA profession has established that the entry-level degree should be a masters level degree. ([Miller et al. 2000](#)) ([Asprey & Helms, 2000](#))


2004


ALL The commercialization of education may water down the ethos of academia. Professional education programs lack the traditional academic integrity. Professional education programs focus too much on pleasing the consumer, thus compromising academic goals. Academic programs accepting funding from private donors may skew their focus and integrity to satisfy donor needs and therefore lose focus on their purpose. ([Bok, 2004](#))

 The American Association of Colleges of Nursing ([AACN](#)) position on the Clinical Practice Doctorate in Nursing set forth their position on the doctorate. Their position statement included 13 recommendations which included but were not limited to:


- Doctoral programs prepare graduates beyond the initial training
- There are seven critical content areas programs must cover, ranging from the scientific reasons for practice, to leadership, to research methodologies, to quality improvement, to healthcare policy, and more.
- The doctorate must require the student to focus on one area of specialization.
- There must be one degree awarded.
- There should be a streamlined way for nurses with a master's degree to obtain a doctorate if they desire. ([AACN](#))


2005

 The DNP will should not be established. Specially, the doctorate should be for academic pursuits and for establishing clinician scholars. The DNP, as outlined, may undermine this premise. In addition, while the healthcare workforce was dealing with a shortage of nurses, the authors posited that this may exacerbate the shortages by shifting the conversation from addressing shortages to the issue of degrees. In addition, without the research focus of the DNP, the authors are concerned that the carefully developed knowledge development trajectories may be thwarted. Finally, there is a concern that the new DNP will marginalize the faculty with an MS within the academic setting. ([Meleis, 2005](#))

 Other nursing professionals are concerned with the rationale the AACN used within their recommendations, along with the regulatory issues that the degree may cause. Finally, there is concern over the focus of the degree and the impact on educational and economic resources for both students and employers. The authors recommend a continuing dialogue before moving to a standard doctorate degree. ([Fulton et al. 2005](#))

2006

 The DNP will bring increased breadth and depth to their practice, and by the integration of clinical leadership and inquiry in the NP role. The DNP degree is a natural evolution that speaks to the larger dynamic that is occurring in the healthcare space. ([Draye, Acker, & Zimmer, 2006](#)) ([Hathaway et al. 2006](#))

 Other nursing professionals are concerned that there will be ethical issues related to social responsibility. It appears that some of the biggest concerns are around resource allocation both educationally and in terms of patient care versus healthcare administration. Furthermore, they are concerned with the lack of research that shows that doctorally prepared NPs may be better prepared to treat patients. Finally, they are concerned that when resources are limited, nurses will choose to obtain the DNP

over the PhD thus reducing the number of nurse-scientists. ([Cipriano Silva et al., 2006](#))

ALL There is little evidence to support the development and pursuit of the clinical doctorate. ([Siler & Smith, 2006](#))

2007



The PA profession is evaluating the merit of an entry-level doctorate. ([Cawley, 2007](#))

2008



The PharmD is clearly established as the entry-level degree for pharmacists. Authors express that this is successful for training clinical pharmacists. ([Ahmed & Ahmad, 2008](#)) ([Kelley et al., 2008](#))

2009



There are two types of DNP degrees: a clinically focused DNP and an administration/leadership focused DNP. The administration/leadership DNP will not help alleviate the healthcare provider shortage. They are concerned that other positions, including the PA, will take over the clinical work. Some authors believe the DNP curriculum did not adequately prepare graduates with sufficient competencies in nursing informatics. ([Bellflower & Likes, 2009](#)) ([Trangenstein et al., 2009](#))

2010



The pharmacy profession is exploring whether a postgraduate degree is needed for clinical pharmacists. ([Bright et al., 2010](#))



There is a need for standardizing the DNP degree. ([Brar, Boschma, & McCuaig, 2009](#))

2012




The pharmacy profession has moved towards more postgraduate residencies and now considering the utility of dual degree programs. ([Shannon et al., 2012](#)) ([Brown, 2012](#))

2013





Few PAs are prepared for, or engaging in, research. ([Cawley & Ritsema, 2013](#))

2016


 The pharmacy profession sees the utility of the PharmD/MD program established at Rutgers in 2013. ([Shah et al. 2016](#))


2017


 Ten years later the PA profession is still evaluating the merit of an entry-level doctorate. Some authors posit that the entry-level doctorate may improve reimbursement practices, enhance professionalism, and continue PA relevance; PAs and NPs need to have a doctorate to navigate the ever-complex healthcare arena. Others warn that higher credentials may not bring increased scope of practice. ([Danielsen. 2017](#)) ([Miller & Coplan. 2017](#)) ([Mittman. 2017](#))

 Recommend considering the change in existing nursing profession policy before requiring doctorate-level nursing residencies. Recommend conducting research to better clarify the direction, job satisfaction and competencies obtained. ([Harper. McGuinness. & Johnson. 2017](#))

2018

 Post-professional doctorates for PAs are taking root. There are two types: the PhD, which is more suited for research and scholarship whereas the professional doctorates (e.g. DHS and DMSc) which are more suited for practice and leadership. There are still questions on the appropriate design and content areas for post-professional doctorate education for PAs. More discussion is needed in a collaborative approach that includes the various PA organizations and other relevant stakeholders with a unified policy statement. ([Kibe, Kayingo, & Cawley, 2018](#))

 The PA profession is modelled after the physician education model. In its origin in the 1700s, the physician training model was a bachelor's degree that evolved to an addition of a postprofessional academic doctorate, and eventually evolved into an entry-to-practice doctorate. Other health professions are in a similar evolution continuum. PAs are the only clinical practitioners with prescribing authority who do not have a profession-specific doctorate option. There are several potential models of doctoral education. Benefits and challenges for postprofessional doctorates are presented, including the dilemma on the title of a "Doctor-PA." ([Kibe & Cawley, 2017](#))

 NPs have the option to obtain a PhD or a DNP. For the individuals pursuing the degree to effectively make the decision that is right for them, the doctoral programs should be clear in their goals and educational programs as the end-products are not the same. ([Cashin. 2018](#))

2019



The DNP's focus on administration/leadership over clinical work is leading to a shortage of clinically qualified NPs. They are struggling with the transition to clinical practice. The DNP's focus on administration/leadership over clinical work is leading to a shortage of clinically qualified NPs. ([Martsof & Sochalski, 2019](#)) ([Mudinger & Carter, 2019](#))



PA education, in concert with other health professions, is undergoing rapid growth and innovation, including the evolution to doctoral education. However, few PA faculty are doctorally trained and there are currently no clear pathways to train them. Recently published faculty competencies can provide a starting point for institutions interested in training faculty. Academic institutions and PA organizations and other stakeholders have an opportunity to prepare the critical mass of faculty needed to prepare for the future of the profession. ([Kibe & Kayingo, 2020](#))

Research on the PA Profession

Literature

2006

[The Doctoral Pipeline in Physician Assistant Education](#)

The purpose of the research was to assess the intentions and motivations of PA faculty regarding the pursuit of doctoral education in 2003.

A total of 419 out of 635 faculty responded. A total of 20% were enrolled in a doctoral program and among those 51% were seeking a PhD: 21% an EdD, 11% a DHS, 6% a DrPH, 5% a DrSc, and 6% other degrees. Among the remaining 80% not currently enrolled in a doctoral program, 3% were planning to enroll in the next 6 months, 6% were planning to apply within the next 6 months, 43% were investigating the possibility, and 53% had no intention of enrolling within the next 5 years.

Conclusions: While the authors expect the number of doctorally prepared PA faculty will double by 2010, it was still projected to be less than 200.

Orcutt VL, Hildebrand A, Jones PE. The Doctoral Pipeline in Physician Assistant Education. *J Physician Assist Educ.* 2006;17(1): 6-9.

2008

[A Clinical Doctorate in Emergency Medicine for Physician Assistants: Postgraduate Education](#)

The purpose of the research was to describe a doctoral program in emergency medicine.

The U.S. Army postgraduate education program in emergency medicine at Brooke Army Medical Center, Fort Sam Houston, Texas transitioned from a 12-month postgraduate residency to an 18-month clinical doctorate in emergency medicine (DSc). The school expanded the postgraduate program for two reasons: 1) to include the growing knowledge related to emergency medicine and 2) to ensure the PAs had the core competencies for PAs to save the lives of trauma patients. This clinical doctorate included an 18-month residency with 21 clinical rotations and engaged students in didactic learning and clinical research. At the time of publication, only four PAs were selected a year and the program was tailored for Army PAs.

Salyer SW. A Clinical Doctorate in Emergency Medicine for Physician Assistants: Postgraduate Education. *J Physician Assist Educ.* 2008;19(3): 53-56.

2009

[Physician Assistant Clinical Doctorate Summit: Final Report and Summary](#)

Purpose: The purpose of the summary was to describe the results of a large summit to discuss the clinical doctorate for the PA profession.

In March 2009, AAPA and PAEA convened a summit with the goal of making recommendations to the PA profession as to whether a clinical doctorate is appropriate for the PA profession as either an entry-level degree or as a postgraduate degree or not at all. In total, more than 50 people attended, including practicing PAs, PA educators, PA students, physicians from allopathic and osteopathic medicine, workforce experts, and representatives of physical therapy, nursing, and other professions. At the conclusion of the summit, four recommendations were made.

1. The PA profession opposes the entry-level doctorate for physician assistants.
2. The PA profession endorses the master's degree as the entry-level and terminal degree for the profession. They recommended that there should be a uniform degree conferred: The Master of Physician Assistant Practice (MPAP).
3. The PA profession supports colleges and universities offering postgraduate, non-profession-specific clinical doctorates (e.g., Doctor of Medical Science, Doctor of Health Science, or other non-PA-specific clinical doctorates) as options available to PAs.
4. The PA profession should explore the development of a model for advanced standing for PAs who desire to become physicians (sometimes called a "PA-to-MD/DO bridge program").

Physician Assistant Clinical Doctorate Summit: Final Report and Summary. *J Physician Assist Educ.* 2009;20(2):22-28.

[Physician Assistant Program Medical Directors' Opinions of an Entry-Level Physician Assistant Clinical Doctorate Degree](#)

The purpose of the research was to assess PA program medical directors' opinions regarding entry-level clinical doctorate degree for all PAs.

With 85 out of 152 medical directors reporting, most disagreed that a clinical doctorate would yield positive outcomes. Almost all (89%) disagreed that a clinical doctorate should be the entry-level degree for PAs. Similarly, 89% disagreed that a PA doctorate is needed to provide high standards of patient care. Most (72%) disagreed that an entry-level clinical doctorate is needed for PAs to compete with NPs who have earned a Doctor of Nursing Practice (DNPs). Conversely, most medical directors agreed that a PA entry-level

clinical doctorate would have some drawbacks. Most (75%) agreed that patients will confuse PAs who have clinical doctorates with physicians; about half (58%) agreed that a PA clinical doctorate would have a negative impact on physician-PA relationships.

Conclusions: Overall, the study results reveal that most PA program medical directors have unfavorable opinions toward an entry-level PA clinical doctorate and currently do not support its implementation.

Coplan B, Richardson L, Shoehr JD. (2009). Physician Assistant Program Medical Directors' Opinions of an Entry-Level Physician Assistant Clinical Doctorate Degree. *J Physician Assist Educ.* 20(2): 8-13.

2011

[Perceptions of U.S. physicians regarding the entry-level doctoral degree in physician assistant education](#)

The purpose of the research was to compare the perceptions of physicians with those of PAs and PA faculty regarding an entry-level doctorate degree.

There was disagreement between the physicians (56%), PAs (79%), and PA faculty (95%) about whether the master's degree was sufficient for PA practice. Similarly, there was disagreement as to whether the profession should require the entry-level doctorate; among the profession, physicians (56%), PAs (83%), and PA faculty (90%) disagreed. Finally, the same pattern held true about whether the entry-level doctorate would yield highest standards of care (physicians, 56%; PAs, 83%; PA faculty, 95%).

Conclusions: Physicians have the greatest support for the entry-level doctorate, followed by weak support from PAs and little support from PA faculty.

Muma RD, Smith BS, Anderson N, Richardson MS, E., White R. Perceptions of U.S. physicians regarding the entry-level doctoral degree in physician assistant education. *J Allied Health.* 2011;40(1):9.

[Physician assistant students' perceptions of an entry-level doctorate degree](#)

The purpose of the research was to assess PA student perceptions of the entry-level doctorate.

PA students were surveyed to assess their perception of the entry-level clinical doctorate for the PA profession. The majority (70.9%) indicated that a master's degree was sufficient to prepare them for a profession in healthcare.

Other concerns were that the increased cost of PA education may dissuade some from the profession (82.1%) and cause patient confusion (71.3%).

Conclusions: PA students overwhelmingly indicated that a master's degree was sufficient to prepare them for a profession in healthcare and did not support the move of the PA profession to an entry-level clinical doctorate degree.

Swanchak LE, Levine AM, Arscott KE, Golden MA. Physician assistant students' perceptions of an entry-level doctorate degree. *J Physician Assist Educ.* 2011;22(1):19-24. doi:10.1097/01367895-201122010-00004

2012

[Benchmarking the Scholarly Productivity of Physician Assistant Educators: An Update](#)

The purpose of the research was to establish a benchmark on scholarly productivity among PA educators.

Of the 425 PA faculty who responded to the survey, the mean number of peer-reviewed publications was 4.2 and the mean number of the prior 3 years was 1.7; however, the median numbers were 1 and 0, respectively. It is important to note that the percentage of faculty with any career publications increased 27% to 55% between 2002 and 2010. Publication success was associated with number of years in PA education, previous publications, and highest degree attained.

Conclusions: While it is important to have PA-specific benchmarks for measuring publication success for faculty, more work is needed to provide faculty with the skills needed to be successful.

Hegmann TE, Axelson RD. Benchmarking the Scholarly Productivity of Physician Assistant Educators: An Update. *J Physician Assist Educ.* 2012;23(2): 16-23.

Update: As of 2019, almost half of all faculty (46.9%) and three-quarters of all program directors (72.3%) had at least one publication. For faculty, the mean number of peer-reviewed publications was 7.2 and the median was 2.0. For program directors it was 5.2 (mean) and 3.0 (median). One in four (23.5%) of program faculty have a doctoral degree; 54.5% of program directors have a doctorate. The most common degrees for faculty and program directors are the PhD (29.8% and 19.5%, respectively) and DHS/DHSc (17.9% and 16.9%, respectively).²

2. Physician Assistant Education Association, By the Numbers: Faculty Report 4: Data from the 2020 Faculty & Directors Survey. Washington, DC: PAEA; 2018. doi: 10.17538/FR4.2020.

2015

[Physician assistant students' attitudes towards a clinical doctoral degree](#)

The purpose of the research was four-fold; physician assistant students' attitudes towards: (a) enrolling in a clinical doctorate program, (b) additional schooling time, (c) monetary costs, and (d) perceived benefits of a clinical doctorate.

In 2010, 53 out of 147 PA programs provided their students' responses to a survey, reflecting 1,658 PA students. Few students (20%) supported an entry-level clinical doctorate. It is not to say that they do not support an optional clinical doctorate; 32% agreed that they would have enrolled in that program if it was available and 58% agreed that it should be an add-on to their PA program. It is unsurprising that the greatest support for the degree is if it added less than 12 months of additional schooling (55% would enroll if that were true); and if it added 20 to 29% more to their current costs for school (compared to more; 45% would enroll versus 2% if the added cost was 50% or more greater). PA students did not appear to see that value with less than half agreeing that a clinical doctorate would provide more career choices (36%), improve clinical competency (41%), and improve research competency (49%). In total 50% of the PA students had a positive view of the clinical doctorate. The authors looked at predictors of having an overall positive view of the clinical doctorate. PA students in longer PA programs (2-3 years) were more likely to have a positive view of the clinical doctorate. Non-white PA students (compared to white PA students) were more likely to have positive attitudes about enrolling in a clinical doctorate program, despite the additional schooling time; as were those with a high school education compared to those with a bachelor's degree. Conversely, PA students aged 25 to 29 years were less likely to want to enroll in a doctorate program than younger participants, aged 19 to 24 years.

Conclusions: PA students' interest in enrolling in a clinical doctorate program may be dependent on additional school time and monetary costs.

Menezes P, Senkomago V, Coniglio D. Physician assistant students' attitudes towards a clinical doctoral degree. *J Physician Assist Educ.* 2015;26(1):3-9.

2017

[Demand and Opportunities for Doctorally Prepared PA Faculty](#)

For almost all faculty job postings, a master's degree was required. However, jobs advertising for program directors, higher leadership positions, and tenure were more likely to prefer candidates with a doctoral degree.

Kayingo G, Kibe L, Cawley JF. Demand and Opportunities for Doctorally Prepared PA Faculty. Presented at AAPA 2017. Las Vegas, NV.

[Reviving the PA Doctorate Debate: A Look at PA Faculty Trends.](#)

Faculty with PA doctorates increased between 1996 and 2015. The most common non-MD doctorate was PhD followed by DHS. Program directors were more likely to have doctorates.

Kibe LW, Kayingo G, Cawley JF. Reviving the PA Doctorate Debate: A Look at PA Faculty Trends. Presented at AAPA 2017. Las Vegas, NV.

Research on the Nurse Practitioner Profession

Literature

2003

[Educational Levels of Hospital Nurses and Surgical Patient Mortality](#)

The purpose of the research was to examine whether the proportion of hospital RNs with BSNs or higher risk-adjusted mortality and failure to rescue.

The researchers examined the outcomes of patients at 168/210 adult acute care hospitals in Pennsylvania that met specific criteria. Nurses in PA were then randomly selected to participate in the project in 1999. Nurse characteristics were matched with hospital characteristics, physician characteristics, and patient outcomes. A 10% increase in proportion of nurses holding a bachelor's degree was associated with a 10% decrease in both the likelihood of patients dying within 30 days of admission and the odds of failure to rescue; after controlling for patient characteristics, hospital characteristics, and nursing staff experience, physician board certification, and more.

Conclusion: Higher levels of education among nurses may be negatively related to patient outcomes.

Aiken LH, Clarke SP, Cheung RB, Sloane DM, Silber JH. Educational Levels of Hospital Nurses and Surgical Patient Mortality. *JAMA*. 2003;290(12):1617-1623. doi:10.1001/jama.290.12.1617.

2005

[The need for some sense making: doctor of nursing practice](#)

The report underlines the concerns the authors have with the American Association of Colleges of Nursing (AACN) recommendations for the practice doctorate for nursing.

The authors are concerned with the rationale the AACN used within their recommendations, along with the regulatory issues that the degree may cause. Finally, there is concern over the focus of the degree and the impact on educational and economic resources for both students and employers.

Conclusions: The authors recommend a continuing dialogue before moving to a standard doctorate degree.

Fulton JS, Lyon BL. The need for some sense making: Doctor of nursing practice. *Online J Issues Nurs*. 2005 Sep 30;10(3):4.

[The Case Against the DNP: History, Timing, Substance, and Marginalization](#)

The purpose of the commentary is express disagreement with the American Association of Colleges of Nursing (AACN) stance on the Doctor of Nursing Practice (DNP).

The authors lay out their arguments that the DNP should not be established. Specially, the doctorate should be for academic pursuits and for establishing clinician scholars. The DNP, as outlined, may undermine this premise. In addition, while the healthcare workforce was dealing with a shortage of nurses, the authors posited that this may exacerbate the shortages by shifting the conversation from addressing shortages to the issue of degrees. In addition, without the research focus of the DNP, the authors are concerned that the carefully developed knowledge development trajectories may be thwarted. Finally, there is a concern that the new DNP will marginalize the faculty with an MS within the academic setting.

Conclusion: The authors are concerned that the DNP is not the cure-all that proponents posit it to be. There are significant concerns that will need to be addressed.

Meleis AI, Dracup K. The case against the DNP: history, timing, substance, and marginalization. *Online J Issues Nurs*. 2005;10(3):3. Published 2005 Sep 30.

2006

[Ethics: Is the Doctor of Nursing Practice Ethical?](#)

The purpose of the report is to address the principle of social responsibility in relationship to the Doctor of Nursing Practice (DNP).

The authors carefully consider ethical principle of social responsibility regarding the DNP. It appears that some of the biggest concerns are around resource allocation both educationally and in terms of patient care versus healthcare administration. Furthermore, they are concerned with the lack of research that shows that doctorally prepared NPs may be better prepared to treat patients. Finally, they are concerned that when resource are limited, nurses will choose to obtain the DNP over the PhD thus reducing the number of nurse-scientists.

Conclusion: The authors have several serious concerns about the DNP degree that have not been addressed to date.

Cipriano Silva MC, Ludwick R. Ethics: Is the Doctor of Nursing Practice Ethical? *Online J Issues Nurs*. 2006 Mar 20;11(2):8.

[The practice doctorate in nursing: approaches to transform nurse practitioner education and practice](#)

The purpose of the research is to give guidance to advanced practice programs considering a practice doctorate, and to further consideration of a practice doctorate for all clinicians and educators. Advanced practice must keep up with the evolving needs of patients and healthcare systems. This article points to the practice doctorate curriculum for nurse practitioners, contrasts it with current NP education, and argues that only it will allow NPs to meet future societal needs.

Conclusion: Nurse practitioner doctoral education can prepare NPs for future societal needs.

Draye MA, Acker M, Zimmer PA. The practice doctorate in nursing: approaches to transform nurse practitioner education and practice. *Nurs Outlook*. 2006;54(3):123-129.

[The practice doctorate: perspectives of early adopters](#)

The purpose of the research is to share observations of the of faculty and administrators of DNP programs.

This article suggests that as the NP practice was about healthcare innovation, the DNP degree is an expected advancement of an innovative practice. The first adopters of such innovations are usually met with challenges, and this article highlights these challenges through firsthand accounts from faculty and administrators of DNP programs.

Conclusion: The DNP is a natural evolution of a disruptively innovative practice.

Hathaway D, Jacob S, Stegbauer C, Thompson C, Graff C. The practice doctorate: perspectives of early adopters. *J Nurs Educ*. 2006 Dec;45(12):487-96. doi: 10.3928/01484834-20061201-04.

2007

[The costs of training a nurse practitioner in primary care: the importance of allowing for the cost of education and training when making decisions about changing the professional-mix](#)

The purpose of the research is to outline the methodology for computing the costs pertaining to training NPs.

In UK healthcare, there has been a notable shift to transfer responsibilities from GPs to less costly professionals. This paper examines the costs related to making that change to healthcare systems and presents a usable methodology for deriving these costs.

Conclusion: The cost of a GP consultation was almost 60% higher than that of an NP.

Curtis L, Netten A. The costs of training a nurse practitioner in primary care: the importance of allowing for the cost of education and training when making decisions about changing the professional-mix. *J Nurs Manag.* 2007;15(4):449-457. doi:10.1111/j.1365-2834.2007.00668.x

2008

[Doctorate of nursing practice: Blueprint for excellence](#)

The purpose of the research is to address the DNP movement and concerns of NPs at the master's level.

Since 2004, AACN has been working to move advanced practice nursing to the doctoral level. This article outlines the history of the DNP movement and the transition process.

Conclusion: The DNP curriculum addresses important topics not currently covered in master's-level curricula.

Sperhac AM, Clinton P. Doctorate of nursing practice: blueprint for excellence. *J Pediatr Health Care.* 2008;22(3):146-151. doi:10.1016/j.pedhc.2007.12.015

2009

[Commentary on Potential Crisis in Nurse Practitioner Preparation in the United States](#)

The purpose of the research is to warn that DNP programs may not adequately prepare APRNs in a clinical sense.

This article recognizes that 85% of DNP programs are nonclinical. On top of that fact, many of the programs do not require clinical preparation beyond the master's level. This is problematic because APRNs may fail to meet community needs due to the lack of preparation.

Conclusion: The future relevance of APRNs in primary care may be threatened if they are not clinically prepared, especially in relation to their physician assistant counterparts.

Bellflower B, Likes W. Commentary on Potential Crisis in Nurse Practitioner Preparation in the United States. *Policy Polit Nurs Pract.* 2019 Nov;20(4):186-187. doi: 10.1177/1527154419882371. Epub 2019 Oct 22.

[Nursing informatics for future nurse scholars: lessons learned with the doctorate of nursing practice \(DNP\)](#)

The purpose of the research is to review the definitions of nursing informatics given the addition of the DNP.

With the addition of the DNP, the definition of nursing informatics expands. The informatics needs of entry-level practitioners, advanced practice nurses, and nurse scholars are all different from each other; a DNP-specific informatics course needs to be implemented.

Conclusion: A core case in informatics for DNP students needs to be created and implemented.

Trangenstein PA, Weiner EE, Gordon JS, McArthur D. Nursing informatics for future nurse scholars: lessons learned with the Doctor of Nursing Practice (DNP). *Stud Health Technol Inform*. 2009;146:551-555.

2010

[The development of nurse practitioner preparation beyond the master's level: what is the debate about](#)

The purpose of the research is to inspect doctoral education in the U.S. and Canada.

The purposes that DNP programs in the U.S. aim to fulfill are not always relevant in other countries such as Canada, where the highest level of education for an NP is a PhD. This article examines the history of doctoral education in the U.S. and Canada. Relevant NP issues are discussed as well.

Conclusion: Further research must be conducted to determine the need for a practice doctorate.

Brar K, Boschma G, McCuaig F. The development of nurse practitioner preparation beyond the master's level: what is the debate about? *Int J Nurs Educ Scholarsh*. 2010;7:Article9. doi: 10.2202/1548-923X.1928. Epub 2010 Mar 8.

2013

[Professional doctorates and nursing practice contribution: a systematic literature search and descriptive synthesis](#)

The purpose of the research is to understand professional doctorates' contributions to nursing practice.

Conclusion: Descriptive synthesis was used to identify themes of papers with explicit methodologies. Professional legitimization and empowerment were

key themes for practitioner researchers. It is important for nurse managers to incorporate research into practice.

Smith NJ. Professional doctorates and nursing practice contribution: a systematic literature search and descriptive synthesis. *J Nurs Manag.* 2013;21(2):314-326. doi:10.1111/j.1365-2834.2012.01446.x

2015

[*Describing a residency program developed for newly graduated nurse practitioners employed in retail health settings*](#)

The purpose of the research is to describe a 12-month pilot residency program aimed at supporting NPs.

Retail health clinics are new practice locations for nurse practitioners. Eight NP graduates were recruited and paired with NP preceptors for a pilot residency program for NPs. Case conferences and webinars enhanced learning during this program. The NPs and preceptors were satisfied with the program, and since the program was focused on gaining clinical and business experience, they did not feel equipped to take a doctorate-level academic course.

Conclusion: Residency programs benefit NPs in retail settings.

Thabault P, Mylott L, Patterson A. Describing a residency program developed for newly graduated nurse practitioners employed in retail health settings. *J Prof Nurs.* 2015;31(3):226-232. doi:10.1016/j.profnurs.2014.09.004

2017

[*Clinical residency training: Is it essential to the Doctor of Nursing Practice for nurse practitioner preparation?*](#)

The purpose of the research is to describe NP residency models with a focus on clinical specialization, describe the history of NP residency programs, and recommend policies for NP residency programs.

Nursing is the only practice for which neither a doctoral degree or a systematic approach to residency training is required. Literature on nurse practitioner residencies was reviewed to deduce that more research needs to be done to explore job satisfaction, clinical competencies, and patient satisfaction.

Conclusion: Academically affiliated residencies reinforce the very link between academic units and clinical agencies that is important to the nursing practice.

Harper DC, McGuinness TM, Johnson J. Clinical residency training: Is it essential to the Doctor of Nursing Practice for nurse practitioner preparation? *Nurs Outlook.* 2017 Jan - Feb;65(1):50-57. doi: 10.1016/j.outlook.2016.08.004. Epub 2016 Aug 31.

2018

[The debate on the knowledge product developed in nursing doctorates and the assignment of the PhD to a modernist endeavor in the creation of the contrasting position](#)

The purpose of the research is to debate the differences between PhDs and professional doctorates.

The differences between PhDs and professional doctorates must be debated. This article explains that mode of learning and the Boyer model fail to properly distinguish the two types of education products.

Conclusion: Discerning the differences between PhDs and professional doctorates is critical to consumer choice.

Cashin A. The debate on the knowledge product developed in nursing doctorates and the assignment of the PhD to a modernist endeavor in the creation of the contrasting position. *Nurse Educ Pract.* 2018 Jul;31:101-103. doi: 10.1016/j.nepr.2018.05.012. Epub 2018 May 23.

2019

[The Need for Advanced Clinical Education for Nurse Practitioners Continues Despite Expansion of Doctor of Nursing Practice Program](#)

The purpose of the research is to raise concerns about NP transition to practice.

It has been noted that DNP programs do not have a clinical focus. This commentary serves to highlight how NPs struggle moving into practice, especially as they move into specialty roles.

Conclusion: DNP education, even 15 years after the AACN position statement on the clinical doctorate, is still a work in progress and will perhaps need to be reworked.

Martsolf GR, Sochalski J. The Need for Advanced Clinical Education for Nurse Practitioners Continues Despite Expansion of Doctor of Nursing Practice Programs. *Policy Polit Nurs Pract.* 2019 Nov;20(4):183-185. doi: 10.1177/1527154419882310. Epub 2019 Oct 22.

[Potential Crisis in Nurse Practitioner Preparation in the United States](#)

The purpose of the present research is to analyze the accredited AACN DNP programs and compare graduates' preparedness for advanced clinical practice or leadership.

In 2004, AACN released a position statement that included nonclinical care in its definition of the nursing practice. Since then, AACN has accredited many DNP programs, with the overwhelming majority having a nonclinical focus. The 553 programs were analyzed and compared; given the need for primary care clinicians, a heavy nonclinical focus in DNP education may jeopardize the future relevance of nurse practitioners.

Conclusion: Most DNP programs are nonclinical. This serves as a shortcoming to NPs in a healthcare space where clinicians are needed.

Mundinger MO, Carter MA. Potential Crisis in Nurse Practitioner Preparation in the United States. *Policy Polit Nurs Pract.* 2019;20(2):57-63. doi:10.1177/1527154419838630

2020

[DNP Practice Improvement Initiative: Staff Nurse Competency Evaluation](#)

The purpose of the research is to describe a practice improvement initiative (PII) that showcases the impact of DNP skills outside of direct patient care.

The practice improvement initiative (PII) was derived from The Donna Wright Competency Assessment Model, AACN DNP Essentials, and National Organization of Nurse Practitioner Faculties to evaluate certain DNP competency skills. Out of 1,055 evaluated staff nurses, 998 scored 100% on the competency assessment. The assessment was subsequently adopted.

Conclusion: This PII model is a useful tool for evaluating competency.

Tharp-Barrie K, Williams TE, Howard PB, El-Mallakh P, MacCallum T. DNP Practice Improvement Initiative: Staff Nurse Competency Evaluation. *J Nurs Adm.* 2020;50(1):22-27. doi:10.1097/NNA.0000000000000834

Research on the Physical Therapist Profession

Literature

1999

[The clinical doctorate: a framework for analysis in physical therapist education](#)

The purpose of the research is to provide the framework for analyzing the role of the clinical doctorate in physical therapist education.

The physical therapy profession and the society around it are discussed in this article through a theoretical approach. Questions from the theoretical model were generated to further discussions; the discussions ultimately conveyed that the DPT degree is best for patient and societal needs.

Conclusion: DPT degree is the most promising preparation for fulfilling the needs of patients and the profession.

Threlkeld AJ, Jensen GM, Royeen CB. The Clinical Doctorate: A Framework for Analysis in Physical Therapist Education. *Phys Ther.* 1999;79(6): 567–581, <https://doi.org/10.1093/ptj/79.6.567>

2005

[Association of importance of the doctoral degree with students' perceptions and anticipated activities reflecting professionalism.](#)

The purpose of the research is to determine if perceived importance of the DPT degree relates to perceived professionalization of physical therapy among students.

According to APTA, the DPT degree is one of the steps towards fully professionalizing physical therapy. However, there are not yet any data that examine the possible link between positive perceptions of the DPT degree and perceptions of physical therapy professionalized within a controlled study with student participants. Responses to questionnaires were received from 919 physical therapy students. There were no measurable differences found between the two studied groups, DPT-I (students who place an importance on the DPT degree) and DPT-NI (students who do not place an importance on the DPT degree).

Conclusion: The present study statistically suggests that those who perceive the DPT degree to be important, and those who do not, do not differ from each other regarding the perception of the professionalism of physical therapy.

Johanson MA. Association of importance of the doctoral degree with students' perceptions and anticipated activities reflecting professionalism. *Phys Ther.* 2005;85(8):766-781.

2009

[Career factors help predict productivity in scholarship among faculty members in physical therapist education programs](#)

The purpose of the research is to explore what factors inspire the productivity of physical therapist faculty.

A representative sample of physical therapist faculty members across the U.S. were administered surveys. Descriptive analysis examined factors responsible for the variability in grantsmanship, peer-reviewed publications, and peer-reviewed presentations. The main factors for the 520 participants were discipline of highest degree, appointment status, and faculty rewards.

Conclusion: There are certain career factors that contribute to the variability in scholastic productivity. However, the status of scholarship in physical therapy remains largely unexplored.

Kaufman RR. Career factors help predict productivity in scholarship among faculty members in physical therapist education programs. *Phys Ther.* 2009;89(3):204-216. doi:10.2522/ptj.20080076

2010

[What does the clinical doctorate in physical therapy mean for rural communities?](#)

The purpose of the research is to explore the impact of the transition to the DPT degree on providing healthcare to rural communities.

The physical therapy profession is transitioning to be defined by an entry-level DPT degree. However, not much is known about the impacts of this transition, especially in rural communities. Telephone interviews were conducted to help answer this question. There was no strong evidence to support that respondents felt that the DPT degree notably improved the supply of healthcare to rural communities.

Conclusion: Even though not much was concluded in the study regarding the impact of the DPT degree on the supply of healthcare to rural communities, further research must be done to examine the positive and negative effects of an emerging DPT degree (as it becomes a bigger part of the workforce) on rural communities.

King J, Freburger JK, Slifkin RT. What does the clinical doctorate in physical therapy mean for rural communities? *Physiother Res Int*. 2010;15(1):24-34. doi:10.1002/pri.455

[Admission variables and academic success in the first year of the professional phase in a doctor of physical therapy program](#)

The purpose of the research is to explore the possible link between preadmission variables and academic success.

In the absence of a standard criteria for predicting an applicant's academic success in a DPT program, the first-year basic sciences physical therapy GPAs of 63 students from fall 2002 to fall 2004 were correlated with preadmission factors such as age, gender, degree status, pre-cumulative GPA, and prerequisite course GPA. Together, pre-cumulative GPA and age accounted for 20.6% of the variance in first-year basic sciences GPA.

Conclusion: Studies like this can foresee a student's potential success in a graduate program.

Ruscigno G, Zipp GP, Olson V. Admission variables and academic success in the first year of the professional phase in a doctor of physical therapy program [published correction appears in *J Allied Health*. 2010 Winter;39(4):320]. *J Allied Health*. 2010;39(3):138-142.

2011

[Doctorate in Physical Therapy: Is It Time for a Conversation?](#)

The purpose of the research is to determine whether the quickly evolving physical therapy profession should require the DPT to enter clinical practice.

The physical therapy profession is constantly evolving, as well as relative societal needs. A conversation needs to be had regarding the requirements for entry-level to practice. There are upsides and downsides to moving toward the DPT. The DPT could 1) allow the profession to become truly autonomous, 2) ensure that clinically practicing therapists attain higher knowledge, 3) increase hours spent mastering patient care through residency, 4) allow for teaching avenues, and 5) drive more students to the profession as the degree holds the prestige of a doctoral-level credential. However, the DPT could also 1) cause confusion as to what significance the new degree has in comparison to preexisting degrees, 2) give off the impression that a higher degree for the same education could be awarded to those who buy into it, 3) drive away professionals with these high credentials from rural communities, 4) have a negative impact on the job field (such as less jobs due to higher salaries or hiring non-therapists), 5) present an obstacle to foreign applicants from

countries with no doctoral-level degree in physical therapy, and 5) present an obstacle for institutions that may have trouble accommodating a doctoral-level program.

Conclusion: It is time to begin discussions about the necessity of the DPT as the entry-level degree of the physical therapy profession.

Mathur S. Doctorate in physical therapy: is it time for a conversation?
Physiother Can. 2011;63(2):140-145. doi:10.3138/physio.63.2.140

[Financing physical therapy doctoral education: methods used by entry-level students and the financial impact after graduation](#)

The purpose of the research is to ascertain how students finance their DPT education.

There is a need for research on student finances and the financial impact of DPT education after graduation. A survey was administered to 92 graduates on these topics. Of the respondents, 86% had student loans, 66% worked during school, 57% received some family assistance, and 21% had some scholarship support. The monthly loan repayment amount was related to lifestyle and saving choices but was not related to the ability to save for a house, have children, or apply for a house or car loan.

Conclusion: There are negative financial impacts DPT education for students after graduation. Physical therapist education programs should help students about taking on debt.

Thompson K, Coon J, Handford L. Financing physical therapy doctoral education: methods used by entry-level students and the financial impact after graduation. *J Allied Health.* 2011;40(4):169-173.

2019

[Impact of funding allocation on physical therapist research productivity and DPT student graduates: an analysis using panel data](#)

The purpose of the present research is to study the effect of research grants on PT graduates and PT scholarly production.

The tuition-driven activities that generate revenue to offset the costs of institutional research may limit research activities of academic physical therapy. The scholarly production of PT scholars have not been investigated. Data from 2008 to 2016 were analyzed to show that a 1% increase in annual tuition is associated with a 24% increase in graduates per year and 41% fewer publications per year. A 1% increase in NIH funding results in 8% fewer

graduates. Institutions with more graduates tend to have more publications, and higher annual tuition tends to spawn more physical therapy graduates and less publications.

Conclusion: Funding sources have variable effects on degree production and scholarly production.

Dickson T, Chen PD, Taylor B. Impact of funding allocation on physical therapist research productivity and DPT student graduates: an analysis using panel data. *Adv Health Sci Educ Theory Pract.* 2019;24(2):269-285. doi:10.1007/s10459-018-9864-8

[Predicting Success for Student Physical Therapists on the National Physical Therapy Examination \(NPTE\): Systematic Review and Meta-Analysis](#)

The purpose of the present research is to study the effect of first attempt NPTE performance, physical therapist applicant variables, and physical therapist student variables.

The NPTE is an important examination, so predictors of student success are worth exploring. Student and applicant variables were studied using data between 1966 and 2018 from PubMed and EBSCO databases. First- and third-year physical therapy GPA had a strong relationship with first attempt NPTE performance, and clinical performance had a weak relationship with first attempt NPTE performance.

Conclusion: Predicting first attempt NPTE performance is not as simple as investigating one single student factor.

Wolden M, Hill B, Voorhees S. Predicting Success for Student Physical Therapists on the National Physical Therapy Examination: Systematic Review and Meta-Analysis. *Phys Ther.* 2020;100(1):73-89. doi:10.1093/ptj/pzz145

Research on the Pharmacist Profession

Literature

1986

[PharmD or BS: Does the Degree Really Make a Difference in Pharmacists' Job Satisfaction?](#)

The purpose of the research is to compare practice patterns and job satisfaction of BS and PharmD level practitioners.

BS and PharmD practitioners were compared on the bases of job satisfaction and job activity. The 1982 Socioeconomic Survey of California Pharmacists provided the data on 1,463 participants who returned questionnaires, 1,030 of which had either a BS or a PharmD as their highest degree. According to the results, BS level practitioners are more likely to be in hospital management or staff positions, the percent of time spent educating was the only job activity in which BS and PharmD practitioners statistically differed, time spent processing the prescription and management activities had the most influence on job satisfaction, academic degree did not have a statistically significant effect upon job satisfaction.

Conclusion: While spending the same amount of time doing the same job-related activities, PharmD pharmacists are no more dissatisfied with their positions than are BS pharmacists.

Ried LD, McGhan WF. PharmD or BS: does the degree really make a difference in pharmacists' job satisfaction? *Am J Pharm Educ.* 1986;50(1):1-5.

1987

[Report of a Survey of PharmD Curricula: Implications for Accreditation Standards](#)

The purpose of the research is to evaluate the standards of Doctor of Pharmacy programs in the U.S.

A questionnaire requesting curricula information was mailed to 40 Colleges of Pharmacy to evaluate Doctor of Pharmacy Programs. The mean total number of hours of instruction for pathophysiology and therapeutics was 27.1 hours. The five largest sections taught were cardiology (mean 38.9 hours), infectious diseases (25.7), endocrinology (22.9), nephrology (22.5), and neurology (20.5). Pharmacokinetics, statistics, and drug information were required by most programs.

Conclusion: There is variation in the curricular requirements among Doctor of Pharmacy programs in the U.S.

Pancorbo S. Report of a survey of PharmD curricula: implications for accreditation standards. *Am J Pharm Educ.* 1987;51(3):284-288.

1988

[Comparison of practice patterns and job satisfaction of entry level PharmD and BS level graduates in hospital and community practice](#)

The purpose of the research is to investigate community and hospital pharmacy practice.

Whether the PharmD should be the entry-level degree for the pharmacy profession is a current debate. A doctorate level degree could further professionalize pharmacy and benefit society. However, the opposing arguments warn that most pharmacists do not require doctorate level training, and the removal of clinical skill requirements could lead to loss of clinical skills and frustration. Questionnaires concentrating on the two research questions 1) 'Do job activities of entry-level PharmD graduates differ from those of BS graduates?' and 2) 'Does the job satisfaction of entry-level PharmD and BS graduates differ?' were mailed to randomly selected California entry-level PharmD graduates and Georgia BS graduates. PharmD and BS respondents devoted the greatest portion of their time to drug distribution.

Conclusion: There are minimal differences in the work activities between PharmD and BS pharmacists. No differences in job satisfaction were found.

Cox FM, Carroll NV. Comparison of practice patterns and job satisfaction of entry level PharmD and BS level graduates in hospital and community practice. *Am J Pharm Educ.* 1988;52(1):47-50.

[Comparison of Job Expectations Fulfillment of BS and Entry-Level PharmD Graduates in Hospital and Community Practice](#)

The purpose of the research is to investigate the potential difference in job expectations between graduates from BS and PharmD programs.

Pharmacy programs must instill in potential graduates realistic job expectations to minimize both job-related stress and mismatches between job expectations and career work. Even though the practice environments in BS and PharmD programs are largely the same from an educational standpoint, it is worth investigating the difference in graduates' risk for job stress between the two programs. Questionnaires aiming to answer 1) 'To what extent are job expectations being fulfilled for pharmacists in hospital and community pharmacy?' and 2) 'In community and hospital practice, does the fulfillment of job expectations of BS and entry-level PharmD graduates differ?' were mailed to randomly selected 1980 to 1986 graduates of seven schools or colleges of

pharmacy. Data showed that the job expectations of pharmacists were generally fulfilled.

Conclusion: There are no differences in overall fulfillment of job expectations between BS and entry-level PharmD graduates in either community or hospital pharmacy practice.

Cox FM, Carroll NV, Wolfgang AP. Comparison of job expectations fulfillment of BS and entry-level PharmD graduates in hospital and community practice. *Am J Pharm Educ.* 1989;53(2):133-137.

2006

[Status of PharmD/PhD Programs in Colleges of Pharmacy: The University of Tennessee Dual PharmD/PhD Program](#)

The purpose of the research is to describe and assess pharmacy dual degree programs in the U.S. with a point of emphasis on the University of Tennessee PharmD/PhD program.

To help combat the pharmacy faculty shortage, the University of Tennessee pioneered the PharmD/PhD program in the early 1990s. The present study investigated the status of this program by mailing surveys in May 2004 to UT dual-degree program participants and deans of US colleges and schools of pharmacy. Students completed more than 30 hours of graduate credit before obtaining their PharmD and 72.2% agreed or strongly agreed that the program met their professional goals. More than 40% of US pharmacy colleges and schools have or plan to have PharmD/PhD programs. Variation existed in the level of integration, PhD concentrations offered, entrance requirements, and student benefits. Most schools with PharmD/PhD programs had few students enrolled in the program, but attrition rates were low.

Conclusion: Pharmacy dual-degree programs can be the answer to a faculty shortage – 47.6% of graduates entered academia and industry.

Gourley DR, Rowell C, Wingate L, et al. Status of PharmD/PhD programs in colleges of pharmacy: The University of Tennessee dual PharmD/PhD program. *Am J Pharm Educ.* 2006;70(2):44. doi:10.5688/aj700244

[Roadmap to 2015: Preparing Competent Pharmacists and Pharmacy Faculty for the Future. Combined Report of the 2005-06 Argus Commission and the Academic Affairs, Professional Affairs, and Research and Graduate Affairs Committees](#)

The purpose of the research is to review the 2005 JCPP vision statement on pharmacy practice, as well as the state of the profession.

Every year the AACP president appoints committees as a strategy to focus on priorities for academic pharmacy. In early 2005, the Joint Commission of Pharmacy Practitioners (JCPP), established in 1977 to facilitate the discussion of priorities of the pharmacy profession, derived a consensus vision for pharmacy practice in the year 2015. The president was sure to align AACP committee goals with this vision. The vision statement desired pharmacists to develop and maintain 1) a commitment to care for, and care about, patients, 2) an in-depth knowledge of medications, and the biomedical, pharmaceutical, sociobehavioral, and clinical sciences, and 3) the ability to apply evidence-based therapeutic principles and guidelines, evolving sciences and emerging technologies, and relevant legal, ethical, social, cultural, economic, and professional issues to contemporary pharmacy practice. Noted topics to be included in a pharmacy curriculum expansion are, but not limited to, competency in geriatrics and geriatric therapeutics, community-based patient education initiatives, drug distribution system management, and palliative care.

Conclusion: Societal needs call for new, effective, and efficient means to influence new generations of pharmacy students to apply new knowledge in this “conceptual age”.

Argus Commission: Roche VF, Nahata MC, et al. Roadmap to 2015: Preparing Competent Pharmacists and Pharmacy Faculty for the Future. Combined Report of the 2005-06 Argus Commission and the Academic Affairs, Professional Affairs, and Research and Graduate Affairs Committees. *Am J Pharm Educ.* 2006;70(Suppl):S5.

2007

[Preadmission predictors of PharmD graduates' performance on the NAPLEX](#)

The purpose of the research is to identify variables that predict graduate performance on the North American Pharmacist Licensure Examination (NAPLEX) test.

To identify variables that play a role in NAPLEX performance, the transcripts and NAPLEX scores of 424 Texas Tech University Health Sciences Center (TTUHSC) Doctor of Pharmacy students from fall 1996 to fall 2001 were

reviewed. Grade point average, composite Pharmacy College Admission Test (PCAT) score, and California Critical Thinking Skills Test (CCTST) score were each positively correlated with NAPLEX score. Other variables, such as type of school where organic chemistry was completed; age; advanced courses taken in chemistry, biology, and math; and attainment of a BS, BA, or MS degree, were not significantly correlated with NAPLEX score. Those who were academically suspended or failed the NAPLEX had significantly different PCAT and CCTST scores from those who passed the NAPLEX.

Conclusion: The combined predictors of many variables that are relevant to an application (PCAT and CCTST scores, prepharmacy GPA, and age) is low; it is most appropriate to judge applications with an open mind.

McCall KL, MacLaughlin EJ, Fike DS, Ruiz B. Preadmission predictors of PharmD graduates' performance on the NAPLEX. *Am J Pharm Educ.* 2007;71(1):5. doi:10.5688/aj710105

2008

[The Controversy of PharmD Degree](#)

The purpose of the research is to raise concerns about issues regarding the PharmD degree.

In the U.S. (and similar nations) clinically skilled pharmacists fill roles in the healthcare system, whereas in other countries, pharmacists mainly work in pharmaceutical industries. Also, according to the Foreign Pharmacy Graduate Equivalency Examination (FPGEE) Committee, "beginning January 1, 2003, NABP will require foreign educated pharmacists to have earned their professional degree from a five-year curriculum program in order to apply for Foreign Pharmacy Graduate Examination Committee (FPGEC) Certification." This exclusionary decree, likely prompted by the U.S. 6-year PharmD, bars some foreign pharmacists from registering for the exam. A modified PharmD degree for other countries should be discussed.

Conclusion: The PharmD degree either (1) should be specified for producing clinical pharmacists, and bachelor of pharmacy programs should be continued as basic degree programs; or (2) must be similarly defined all over the world.

Ahmed SI, Ahmad Hassali MA. The controversy of PharmD degree. *Am J Pharm Educ.* 2008;72(3):71. doi:10.5688/aj720371

[Influences on Pharmacy Students' Decision to Pursue a Doctor of Pharmacy Degree](#)

The purpose of the research is to determine the influences for pursuing a pharmacy degree and whether influences vary with race.

A 30-question survey was developed to collect data on influences for pursuing a pharmacy degree and whether race plays a role in the influences. Complete data was collected from 403 PharmD students at the University of Georgia and Florida A&M University. Most students were encouraged by family members, pharmacists, and other students to pursue pharmacy, as well as through work and volunteer experiences.

Conclusion: Influences for pursuing a pharmacy degree were similar across student groups.

Anderson DC, Sheffield MC, Hill AM, Cobb HH. Influences on pharmacy students' decision to pursue a doctor of pharmacy degree. *Am J Pharm Educ.* 2008;72(2):22. doi:10.5688/aj720222

[Impact of a Dual PharmD/MBA Degree on Graduates' Academic Performance, Career Opportunities, and Earning Potential](#)

The purpose of the research is to evaluate the academic experience and satisfaction of students who completed a dual PharmD/MBA degree program and the program's long-term impact on the students' career choice and earning potential.

GPA's, job placement, and starting job salaries were compared between graduates who completed the dual PharmD/MBA program and those who completed only the PharmD program. A satisfaction survey was administered to 17 dual-degree graduates in May 2007. Data from a standardized job placement and starting salary survey instrument completed by all PharmD graduates were also obtained, as well as all students' final GPAs. The graduating GPAs of dual-degree students were higher than those of both pharmacy (3.52 vs 3.41) and business (3.82 vs. 3.68) students not enrolled in the dual-degree program. Dual-degree students were slightly less likely to enter a residency (17% vs. 27%) than other pharmacy graduates. Mean starting salaries (\$111,090 vs. \$101,965) and mean total first-year compensation (\$127,290 vs. \$110,388) were significantly higher for dual-degree graduates compared to the PharmD graduates.

Conclusion: High academic achievement, high satisfaction, and increased access to career opportunities are all descriptors of those who complete a dual degree program, which make the case for continued support of dual-degree programs.

Chumney EC, Ragucci KR, Jones KJ. Impact of a dual PharmD/MBA degree on graduates' academic performance, career opportunities, and earning potential. *Am J Pharm Educ.* 2008;72(2):26. doi:10.5688/aj720226

[Writing PharmD program-level, ability-based outcomes: key elements for success](#)

The purpose of the research is to review ability-based outcomes and present a case study of how The Ohio State University revised their PharmD program-level outcomes.

The production of capable pharmacy graduates is a goal of pharmacy education. The “backward design” of a pharmacy curriculum best suits this goal – building a pharmacy curriculum using the expectations of what a pharmacy graduate should be able to do, or ability-based outcomes (ABOs). At The Ohio State University, the College Curriculum Committee was responsible for revising the PharmD program-level outcomes. Several faculty meetings discussed relevant ABOs. A college’s experiential advisory committee made up of preceptors and faculty members, reviewed documents from the College Curriculum Committee and provided feedback. The College Curriculum Committee ultimately unanimously agreed to a set of 100 outcomes divided into 3 areas: provide population-based and patient-specific pharmaceutical care, manage and use resources of the health-care system, and promote health improvement, wellness, and disease prevention.

Conclusion: The process of discussing and approving curricular objectives and outcomes was important to the development and refinement of the PharmD curriculum at The Ohio State University.

Kelley KA, Coyle JD, McAuley JW, Wallace LJ, Buerki RA, Frank SG. Writing PharmD program-level, ability-based outcomes: key elements for success. *Am J Pharm Educ.* 2008 Oct 15;72(5):98.

[Dual degree programs at the University of Kentucky College of Pharmacy](#)

The purpose of the research is to describe three joint programs at the University Kentucky College of Pharmacy.

An evolving pharmacy profession provides opportunities for graduates beyond community pharmacy or hospital practice. To prepare students for management and leadership positions that require knowledge obtained through a PharmD degree, the University of Kentucky College of Pharmacy has established 3 joint degree programs: the PharmD/Master of Business

Administration (PharmD/MBA), PharmD/Master of Public Administration (PharmD/MPA), and PharmD/Master of Science in Economics (PharmD/MS). The goal of the joint PharmD/MBA program is to educate students to assume responsibilities as executives and administrators in healthcare delivery so that patients may receive quality pharmaceutical products and services. The PharmD/MPA dual degree is designed to prepare students for careers in state and federal regulatory and administrative agencies, not-for-profit organizations, the pharmaceutical industry, managed care organizations, and academia. The dual PharmD/MS in Economics degree, offered in conjunction with the Gatton College of Business and Economics, provides students with the strong analytical skills necessary to ensure that resources are being utilized in an efficient manner within the health care sector.

Conclusion: Dual-degree programs at the University of Kentucky have been designed to provide students with clinical, business, administrative, policy analysis, and fiscal capabilities required to excel as leaders in the future health care system.

Senft SL, Thompson C, Blumenschein K. Dual degree programs at the University of Kentucky College of Pharmacy. *Am J Pharm Educ.* 2008;72(1):12. doi:10.5688/aj720112

2009

[Practice settings, job responsibilities, and job satisfaction of nontraditional PharmD and BS pharmacy graduates](#)

The purpose of the research is to assess differences in the practice of pharmacy and in job satisfaction between graduates of a Doctor of Pharmacy (PharmD) program and a Bachelor of Science (BS) in pharmacy program.

Two separate surveys that assessed pharmacy practice and job satisfaction were mailed to 293 PharmD graduates and 293 BS graduates. Based on data from the 214 PharmD and 189 BS graduates who responded, PharmD graduates reported greater satisfaction than their BS counterparts in their current position and with the pharmacy career. PharmD graduates were more likely to practice in a hospital and have clinical responsibilities.

Conclusion: PharmD graduates are more likely to have job satisfaction compared to BS graduates.

Joyner PU, Thomason TE, Blalock SJ. Practice settings, job responsibilities, and job satisfaction of nontraditional PharmD and BS pharmacy graduates. *Am J Pharm Educ.* 2009;73(2):33. doi:10.5688/aj730233

2010

[The Mandatory Residency Dilemma: Parallels to Historical Transitions in Pharmacy Education](#)

The purpose of the research is to review recent literature regarding mandatory residencies in the perspective of the historical entry-level degree debate.

Colleges of pharmacy have introduced the PharmD degree as the sole entry-level degree for licensure as a pharmacist. However, the necessity for residency training remains a debated topic, notably within a 2006 document by the American College of Clinical Pharmacy calling for mandatory residency training for entry into pharmacy practice by 2020. The present study reviewed articles about mandatory residency and entry-level degree debates. Objectives, rationale for change, educational issues, pharmaceutical care issues, and economic issues were similar between the two debates.

Conclusion: A consensus among pharmacists and pharmacy organizations has not yet been reached about an endorsement of the entry-level degree, but support exists for mandatory residency training for all pharmacists involved in direct patient care. Mandatory residency training poses questions regarding timeline, economics, and feasibility.

Bright DR, Adams AJ, Black CD, Powers MF. The mandatory residency dilemma: parallels to historical transitions in pharmacy education. *Ann Pharmacother.* 2010;44(11):1793-1799. doi:10.1345/aph.1P394

2011

[Economic analysis of earning a PhD degree after completion of a PharmD degree](#)

The purpose of the research is to determine the net present value (NPV) and internal rate of return (IRR) for earning a doctor of philosophy (PhD) degree and pursuing careers commonly associated with that degree after completion of a doctor of pharmacy (PharmD) degree compared to entering pharmacy practice directly upon completion of the PharmD degree.

In the steps to compare net present value (NPV) and internal rate of return (IRR) between careers of PhD degree graduates and practicing community pharmacists, income profiles were constructed based on 2008 annual salary data. Trends in IRR also were examined across career paths from 1982 to 2008. The NPVs for careers associated with the PhD degree were negative compared to those of the practicing community pharmacist.

Conclusion: There is a need for financial incentives for PharmD graduates to pursue graduate school. This study looks to recruitment methods as an opportunity to promote financial incentives.

Hagemeier NE, Murawski MM. Economic analysis of earning a PhD degree after completion of a PharmD degree. *Am J Pharm Educ.* 2011;75(1):15. doi:10.5688/ajpe75115

2012

[Availability and perceived value of masters of business administration degree programs in pharmaceutical marketing and management](#)

The purpose of the research is to examine pharmacist-targeted Master of Business Administration (MBA) degree programs and investigate pharmacists' perceptions regarding them.

The MBA programs in pharmaceutical marketing the U.S. deserve scrutiny. Programs were compared and clinical preceptors were surveyed in the present study. As told by the data from 33 pharmacist preceptors, respondents preferred MBA programs related to healthcare or pharmacy (66%) over general MBA programs (33%).

Conclusion: An MBA in pharmaceutical marketing and management could supply pharmacists with business knowledge and the ability to be a strong candidate in a competitive job market.

Alkhateeb FM, Clauson KA, Latif DA. Availability, and perceived value of masters of business administration degree programs in pharmaceutical marketing and management. *Am J Pharm Educ.* 2012;76(4):64. doi:10.5688/ajpe76464

[The paradox of pharmacy: A profession's house divided](#)

The purpose of the research is to describe the paradox in pharmacy between the vision of patient care and the reality of community pharmacy practice.

Community pharmacists are not doing what they have been trained to do. They are not directly involved in patient care. The relationship between a healthcare consumer and a pharmacist is merely a retail prescription, even though this pharmacist has received patient-centered PharmD-level training. Medication therapy management is a service a pharmacist could provide that could extend their duties and usefulness.

Conclusion: To help all pharmacists reach their full potential, visions for pharmacy must acknowledge all realms of practice.

Brown D. The paradox of pharmacy: A profession's house divided. *J Pharm Educ.* 2012 Oct 12;76(8):145. doi: 10.5688/ajpe768145.

[Pharmacy residencies and dual degrees as complementary or competitive advanced training opportunities](#)

The purpose of the research is to compare key aspects of pharmacy residencies and dual degree programs and examine U.S. pharmacy schools' promotion strategies for these advanced training opportunities.

Advanced graduate training has enhanced the pharmacy practice and has allowed students to attain valuable knowledge beyond a PharmD degree. It was found that advanced training is highly advantageous in many practice settings, most ideally a dual PharmD degree with residency.

Conclusion: More support is needed to further enhance the pharmacy profession with respect to advanced training.

Shannon SB, Bradley-Baker LR, Truong HA. Pharmacy residencies and dual degrees as complementary or competitive advanced training opportunities. *Am J Pharm Educ.* 2012;76(8):145. doi:10.5688/ajpe768145

2013

[Pharmacists' expectations for entry-level practitioner competency](#)

The purpose of the research is to determine if defined subgroups of pharmacists' have variability in their expectations for competency of entry-level practitioners.

Performance on examinations like NAPLEX is one of the key factors in deciding whether one is eligible to be licensed to enter professional practice. In turn, high performance on these examinations should align with the ability to apply the vast knowledge in real clinical settings. The present study collected data from the 2009 National Pharmacy Practice Survey to determine to what extent pharmacists' degree, practice setting, and experience as a preceptor were associated with the ratings they assigned to 43 competency statements (which determine NAPLEX content) for entry-level practitioners. Pharmacists with a PharmD degree rated the competency statements higher than their BS degree counterparts. Pharmacists working in inpatient settings gave slightly higher ratings to the competency statements than did pharmacists working in outpatient settings, pharmacists without direct patient care responsibilities, and those in academia. There were no significant differences among practitioner subgroups' criticality ratings regarding practice setting. Preceptor pharmacists' criticality ratings of the competency statements were not significantly different from those of non-preceptor practitioners.

Conclusion: Pharmacists agreed in their expectations for entry-level practitioners. However, pharmacy education and regulation stakeholders should continue to ensure that education aligns with the needs of the profession.

Boyle M, Myford C. Pharmacists' expectations for entry-level practitioner competency. *Am J Pharm Educ.* 2013;77(1):5. doi:10.5688/ajpe7715

[The prevalence and characteristics of dual PharmD/MPH programs offered at US colleges and schools of pharmacy](#)

The purpose of the research is to assess the prevalence and characteristics of curriculum in dual Doctor of Pharmacy (PharmD)/Master of Public Health (MPH) degree programs.

To assess the prevalence and characteristics of curriculum in dual Doctor of Pharmacy (PharmD)/Master of Public Health (MPH) degree programs, an 18-item survey was administered to faculty members at colleges of pharmacy. Data from the 110 colleges that responded showed that 21% offered a PharmD/MPH degree. Common characteristics among these programs were early curricular recruitment, small enrollment, and interdisciplinary coursework occurring online and in the classroom. About 55% of responding programs without a formal dual-degree program reported that additional public health training was available.

Conclusion: Approximately one out of five colleges of pharmacy offer a PharmD/MPH dual degree.

Gortney JS, Seed S, Borja-Hart N, et al. The prevalence and characteristics of dual PharmD/MPH programs offered at US colleges and schools of pharmacy. *Am J Pharm Educ.* 2013;77(6):116. doi:10.5688/ajpe776116

[Admission variables predictive of academic struggle in a PharmD program](#)

The purpose of the research is to characterize and describe admission variables predictive of poor grade attainment by students in two pathways (traditional and provisional) to a Doctor of Pharmacy (PharmD) program.

A retrospective analysis of course grades of PharmD students admitted from 2000 to 2009 (N= 1,019) in the traditional degree pathway ("1 plus 5" degree program) and the provisional pathway (admitted directly from high school) was performed to identify admission variables that serve to predict poor grade attainment. Unsatisfactory grades were associated with 1) all Pharmacy College Admission Test (PCAT) subcategory scores, PCAT composite score, cumulative prepharmacy coursework hours, prepharmacy grade point average (GPA), prepharmacy science and math GPA, and interview score for accepted students in the traditional pathway, and 2) PCAT-quantitative analysis, PCAT composite score, prepharmacy cumulative GPA, prepharmacy science and

math GPA, English American College Testing (ACT) score, and composite ACT score for students in the provisional pathway.

Conclusion: To reduce retention, admission committees should be attentive to PCAT scores and GPAs and progression committees should be strategic in their early program coursework designs.

Schauner S, Hardinger KL, Graham MR, Garavalia L. Admission variables predictive of academic struggle in a PharmD program. *Am J Pharm Educ.* 2013;77(1):8. doi:10.5688/ajpe7718

2014

[Pharmacy students' perspectives on a PharmD/MPH dual degree program at a large metropolitan school of pharmacy](#)

The purpose of the research is to determine Doctor of Pharmacy (PharmD) students' perceptions of a PharmD/MPH dual degree program.

A seven-item survey was administered to students at a large metropolitan school of pharmacy in April 2012 to gauge their perceptions of a PharmD/MPH dual degree program. Data from the 441 respondents showed that 72.3% would "likely" or "very likely" consider enrolling in such a program, and 77.4% believed that the program would attract future students. The most identified potential limitations to pursuing the dual degree were time commitment (19.9%), increased workload and stress (11.2%), and tuition cost (10.3%). The most notable advantages documented were increased job opportunities for public health-related pharmacy positions (26.9%), increased ability to serve patients and the community (13.4%), and increased marketability for future jobs (8.7%).

Conclusion: PharmD students positively view the PharmD/MPH dual degree program.

Holtzman CW, Sifontis NM. Pharmacy students' perspectives on a PharmD/MPH dual degree program at a large metropolitan school of pharmacy. *Pharm Pract (Granada).* 2014;12(1):359. doi:10.4321/s1886-36552014000100003

[Education, training, and academic experience of newly hired, first-time pharmacy faculty members](#)

The purpose of the research is to describe the education, training, and academic experiences of newly hired faculty members at U.S. colleges and schools of pharmacy during the 2012-2013 academic year.

The present study was a survey regarding education, training, and academic experiences was conducted of all first-time faculty members at U.S. colleges and schools of pharmacy hired during the 2012-2013 academic year. Pharmacy practice faculty members accounted for the majority (68.2%) of new hires. Ambulatory care was the most common pharmacy specialty position (29.8%). Most new faculty members had a Doctor of Pharmacy (PharmD) as their terminal degree (74.8%), and 88.3% of pharmacy practice faculty members completed a residency. Most faculty members had at least 3 prior academic teaching, precepting, or research experiences.

Conclusion: New faculty members, coming with precepting pharmacy students, facilitating small discussions, and guest lecturing experience, were hired most frequently for clinical faculty positions at the assistant professor level and most frequently in the specialty of ambulatory care.

Wanat MA, Fleming ML, Fernandez JM, Garey KW. Education, training, and academic experience of newly hired, first-time pharmacy faculty members. *Am J Pharm Educ.* 2014;78(5):92. doi:10.5688/ajpe78592

2015

[Process and Performance Outcomes of a Nontraditional Postbaccalaureate PharmD Program Geared Toward Internationally Trained Pharmacists](#)

The purpose of the research is to evaluate the international postbaccalaureate Doctor of Pharmacy (IPBP) and the accomplishments of its graduates.

The international postbaccalaureate Doctor of Pharmacy (IPBP) program has attracted internationally trained pharmacists from approximately 25 countries and 6 continents, mostly residents of the U.S., to attain the Doctor of Pharmacy (PharmD) degree at the Western University of Health Sciences. Benchmark measures assessed for this group of students include the internal assessment entrance examination, admissions scores, academic assessments from didactic blocks, and scores on the North American Pharmacy Licensure Examination (NAPLEX).

Conclusion: The prestigious international postbaccalaureate Doctor of Pharmacy (IPBP) continues to show its value by producing competently successful graduates.

Prabhu S, Chung E, Le QA, Nguyen M, Robinson D. Process and Performance Outcomes of a Nontraditional Postbaccalaureate PharmD Program Geared Toward Internationally Trained Pharmacists. *Am J Pharm Educ.* 2015;79(8):113. doi:10.5688/ajpe798113

[Economic Analysis of Obtaining a PharmD Degree and Career as a Pharmacist](#)

The purpose of the research is to evaluate the economic value of pharmacy education and the effects of the cost of pharmacy school, the length of degree program, residency training, and pharmacy career path on net career earnings.

The present study evaluated pharmacy education and pharmacy school costs. Estimated costs of education including student loans were considered in calculating net career earnings of 4 career paths following high school graduation: (1) immediate employment, (2) employment with bachelor's degree in chemistry or biology, (3) employment as a pharmacist with no residency training, and (4) employment as a pharmacist after completing one or two years of residency training. PharmD graduates may accumulate net career earnings of \$5.66 million to \$6.29 million, roughly 3.15 times more than high school graduates and 1.57 to 1.73 times more than those with bachelor's degrees in biology or chemistry. Attending a public pharmacy school after completing 3 years of prepharmacy education generally leads to higher net career earnings. Community pharmacists have the highest net career earnings, and PGY-1 residency-trained hospital pharmacists have greater net career earnings than those who immediately started their careers in a hospital setting

Conclusion: Pharmacy education yields favorable financial return.

Chisholm-Burns MA, Gatwood J, Spivey CA. Economic Analysis of Obtaining a PharmD Degree and Career as a Pharmacist. *Am J Pharm Educ*. 2015;79(8):117. doi:10.5688/ajpe798117

2016

[The Racial and Ethnic Representation of Faculty in US Pharmacy Schools and Colleges](#)

The purpose of the research is to describe the representation of racial and ethnic minorities among faculty members in colleges of pharmacy, evaluate the representation of racial and ethnic minorities in historically black colleges and universities (HBCUs), newer doctor of pharmacy (PharmD) programs, and PharmD programs with a religious affiliation; and compare racial and ethnic pharmacy faculty data to trends in medical and dental schools.

Lack of faculty diversity is a shortcoming of the pharmacy profession. The present study aims to calculate the level of this diversity and trends toward progress. National databases and published reports provided data that was comparatively evaluated and then transformed into the following results: 1) Asians are overrepresented in pharmacy, while all other minority groups are underrepresented, 2) HBCUs, newer schools, and religious-affiliated

institutions have greater numbers of African American/Black faculty, 3) newer schools also have better representation of Hispanic faculty, 4) African American/Black faculty is better represented in pharmacy than in medicine and dentistry, and 5) Hispanic faculty are less represented in pharmacy than in dentistry.

Conclusion: Plans to improve diversity and address minority representation are necessary for meeting the healthcare needs of the community.

Hagan AM, Campbell HE, Gaither CA. The Racial and Ethnic Representation of Faculty in US Pharmacy Schools and Colleges. *Am J Pharm Educ.* 2016;80(6):108. doi:10.5688/ajpe806108

[The PharmD/MD Dual-Degree Program and Its Potential Value in the Pharmaceutical Industry](#)

The purpose of the research is to assess the perceived value of the new PharmD/MD dual-degree skill set and to identify functions where the combined training has its best fit.

In the 2013-14 academic year, Rutgers, The State University of New Jersey launched the first PharmD/MD dual-degree program. The present study conducted a survey that assessed this degree and the value of the skill set this combined training fosters. It was found that the combined nature of this training is highly valued in the areas of clinical pharmacology, drug safety and pharmacovigilance, medical affairs/strategy, and medical science liaisons.

Conclusion: Studies of future graduates of this program will provide more evidence of the value of this dual degree in the healthcare settings.

Shah KS, Marwah U, Bundra K, Goldin CS, Toscani M, Barone JA, Colaizzi JL. The PharmD/MD Dual-Degree Program and Its Potential Value in the Pharmaceutical Industry. *Ther Innov Regul Sci.* 2016 Nov;50(6):839-845. doi: 10.1177/2168479016652926. Epub 2016 Jul 10.

2017

[Effect of a Dedicated Pharmacy Student Summer Research Program on Publication Rate](#)

The purpose of the research is to investigate the impact of an optional 12-week summer research program on the publication outcomes and satisfaction with the required research projects of doctor of pharmacy (PharmD) students at the Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS) at the University of California San Diego.

The present study reviewed publications on PubMed and Google and deployed surveys to students at the Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS) at the University of California San Diego, home to an optional 12-week summer research program, to gauge students' publication outcomes and satisfaction with required research projects. The students who chose the 12-week summer research program pathway (n=130) produced more full-text manuscripts and abstracts than students who underwent the standard pathway (n=305). Regardless of whether the option research program was chosen or not, students agreed upon the value of a research project.

Conclusion: The 12-week intensive summer research program improved the publication rate of pharmacy students and provided a high overall satisfaction with this independent learning experience.

Brandl K, Adler D, Kelly C, Taylor P, Best BM. Effect of a Dedicated Pharmacy Student Summer Research Program on Publication Rate. *Am J Pharm Educ.* 2017;81(3):48. doi:10.5688/ajpe81348

[Career Progression of the Pharmacy/MBA Professional: Characterization and Perceptions of the Combined Degree](#)

The purpose of the research is to characterize pharmacy/MBA professionals during their entry-level and current positions and to describe their attitudes and perceptions toward their combined degree.

The present study developed a survey with the collaboration of the University of Buffalo (UB) School of Management and administered it in winter 2015 to UB alumni who obtained both pharmacy and MBA degrees. Data from 68 of the 115 pharmacy/MBA professionals who were invited to the study showed that post-graduate training was completed by 24% of respondents, and most commonly it was a residency program. After adjusting for inflation to 2014 dollars, the median entry-level salary for pharmacy/MBA professionals was \$140,123 (mean = \$144,327) and this increased to \$179,947 (mean = \$205,623) for those in their current position. Practice settings for entry-level professionals included pharmaceutical industry (25%) and chain pharmacies (18%). Most respondents believed that a combined degree helped in career advancement (85%) and made them more competitive in the job market (90%).

Conclusion: Pharmacy/MBA professionals are well-compensated, work in a wide range of professional settings, and have a high-level of satisfaction with their combined degree.

Daly CJ, Tierney SL, O'Brien E, Fiebelkorn KD, Jacobs DM. Career Progression of the Pharmacy/MBA Professional: Characterization and Perceptions of the Combined Degree. *Am J Pharm Educ.* 2017;81(4):72. doi:10.5688/ajpe81472

[Attitudes and Perceptions of Dual PharmD/MBA Degree Program Students](#)

The purpose of the research is to understand pharmacy students' reasons for pursuing a dual PharmD/MBA degree and their perceptions of the impact a dual degree will have on their careers.

The present study developed a survey with the collaboration of the University of Buffalo (UB) School of Management and administered it in January 2015 to registered students in the University at Buffalo PharmD/MBA program. Data from 23 of the 24 PharmD/MBA curriculum enrollees who were invited to the study showed that employment opportunities and career advancement were the most influential determinants in deciding to pursue an MBA degree. All respondents (100%) felt the job marketplace for pharmacy graduates is becoming increasingly difficult, 96% believe they will earn a higher midpoint salary with a PharmD/MBA, and 82% would recommend a PharmD/MBA to first year pharmacy students.

Conclusion: Students are responding to their understandings of job market challenges by undertaking the dual PharmD/MBA degree.

Jacobs DM, Daly CJ, Tierney SL, O'Brien E, Fiebelkorn KD. Attitudes and Perceptions of Dual PharmD/MBA Degree Program Students. *Am J Pharm Educ.* 2017;81(4):71. doi:10.5688/ajpe81471

[Measuring Up - Defining the Quality of PharmD Programs](#)

The purpose of the research is to define quality and associated metrics related to Doctor of Pharmacy degree programs.

A survey on measures used to evaluate the quality of their schools were sent to randomly selected pharmacy deans from 15 public and 17 private schools. Both public and private school leaders identified and agreed on nine categories of quality measures, with "placement" ranked as the most important measurement category.

Conclusion: Identifying standard categories and metrics to assess school quality could allow for comparisons of schools.

Mattingly TJ 2nd, Romanelli F, Cain J, Schlesselman LS. Measuring Up - Defining the Quality of PharmD Programs. *Am J Pharm Educ.* 2017;81(9):6071. doi:10.5688/ajpe6071

2018

[A Modified Approach to Setting Curriculum Boundaries in Pharmacy School](#)

The purpose of the research is to propose assistance to Doctor of Pharmacy department heads in their curriculum decision-making.

As new topics and content for instruction are identified, schools and colleges are faced with either extending the PharmD curriculum length, removing other content, or diminishing the depth that other content is covered to make room for new content. The present study proposes the Ebel grid as a tool that can solve the decision-making issues caused by the need for curriculums to include new topics relative to an evolving pharmacy profession.

Conclusion: In PharmD curriculum decision-making, the Ebel grid is a tool that can be used to identify the criticality and relevance of encountered topics.

Longyhore DS, Dixon DL, Noel ZR. A Modified Approach to Setting Curriculum Boundaries in Pharmacy School. *Am J Pharm Educ.* 2018;82(9):7010. doi:10.5688/ajpe7010.

2019

[An update on characteristics of dual PharmD/MBA programs in the United States: 2016-201](#)

The purpose of the research is to update current literature on the characteristics of dual Doctor of Pharmacy (PharmD) and Master of Business Administration (MBA) programs in the U.S..

Emails were sent to representatives of schools to request information that the present study's searches of institution websites could not find. Then, after initial data organization, surveys on program history, student and school demographics, enrollment requirements, and program structure were sent to those representatives. Data from 36 of the 66 schools of pharmacy asked to participate in the study showed that most of the programs (43%) have been active for 11 to 20 years, and were similar in enrollment requirements, point of entry, and time to dual degree completion. Programs varied in the program structure, including how dual degrees are awarded.

Conclusion: Programs interested in developing or modifying existing dual programs or students deciding whether to pursue a dual PharmD/MBA will find this study's update on dual degree program characteristics useful.

Salmon K, Fan J. An update on characteristics of dual PharmD/MBA programs in the United States: 2016-2017. *Curr Pharm Teach Learn*. 2019;11(5):469-475. doi:10.1016/j.cptl.2019.02.009

[A transition from the BPharm to the PharmD degree in five selected countries](#)

The purpose of the research is to review opinions around issues of transition from the BPharm to the PharmD degree in the U.S., Japan, South Korea, Pakistan, and Thailand.

Many countries believe the transition to the clinically focused PharmD degree to be a means of developing the pharmacy profession. However, while phasing into the PharmD degree, the different needs of each country need not be overlooked. Pharmacy academic leaders must also be cognizant of educational quality and degree impacts and outcomes. For example, in Japan, there was a strong demand for highly competent pharmacists to deliver pharmaceutical care. Thus, obtaining a national pharmacy license requires completion of a 6-year program.

Conclusion: To decide whether to adopt a PharmD program, pharmacy academic leaders should assess the needs of their countries.

Supapaan T, Low BY, Wongpoowarak P, Moolasarn S, Anderson C. A transition from the BPharm to the PharmD degree in five selected countries. *Pharm Pract (Granada)*. 2019;17(3):1611. doi:10.18549/PharmPract.2019.3.1611