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REVIEW ARTICLE

The Doctor of Nursing Practice: A Narrative Review of the History and Current Status

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ABSTRACT

Objective: The objective of this narrative review of Doctor of Nursing Practice implementation is to present the background leading to the 2004 American Association of Colleges of Nursing recommendation that the Doctor of Nursing Practice degree be required for advanced practice, discuss the implementation of programs, identify challenges, and provide recommendations for the future.

Method: Both publications and organizational documents, such as white papers and position statements, were reviewed to identify the historical antecedents to the Doctor of Nursing Practice degree recommendation. A review of the status of the degree acceptance by professional organizations was conducted to identify current trends and challenges.

Summary: In 2004, the American Association of Colleges of Nursing voted to require the Doctor of Nursing Practice degree for advanced practice providers by 2015. This occurred within a broad initiative within health science disciplines to move to a practice doctorate. The need for the degree was supported by the Institute of Medicine 2002 recommendation for additional competencies in health professions education and the National Research Council 2005 recommendation that nursing create a clinical doctorate. The goal of the Doctor of Nursing Practice by 2015 has not been met, although programs are growing across the country with varying models of education. Currently nurse anesthesia requires the Doctor of Nursing Practice, clinical nurse specialists have a target date for the requirement of the Doctor of Nursing Practice, nurse practitioner recommendations are to move from the master's level to the Doctor of Nursing Practice, but certification bodies have not required it, and nurse midwives will accept but have not endorsed a requirement for the Doctor of Nursing Practice. Nurse executives have recommended the Doctor of Nursing Practice for advanced leadership, but many health systems do not require it. There are multiple challenges to developing a pathway to the Doctor of Nursing Practice, including the multiple organizations influencing educational programs, the certification and licensure of graduates, and the employment practices by health systems. These challenges will have to be addressed to achieve the original goal of doctoral education for advanced practice in nursing.

I. Introduction

In the United States the advanced practice initiative for nursing began in the 1960s with the introduction of the nurse practitioner certification project, conceptualized by Loretta Ford, RN and Henry Silver, MD as a role to extend primary care services to children and families[1]. This project extended the education of the nurse and provided certification as a nurse practitioner. In the 1970s the Committee to Study Extended Roles for Nurses, designed to work collaboratively with the Department of Health Education, and Welfare, supported extending the role of nurses and advocated national certification, opening the door to the nurse practitioners' ability to diagnose and prescribe. In 1977, the American Nurses Association responded and began to offer certification examinations.[2] Advocacy for the advanced practice nurse to practice to the full scope of their training was more recently provided through the 2010 Future of Nursing Report by the National Academy of Medicine.

Nurse practitioner education, as with other advanced practice roles, began as a certificate program, not a degree program. By the late 1980s most programs had transitioned to masters' programs.[3] Today a master's degree is required for certification and licensure as a nurse practitioner, nurse midwife, clinical nurse specialist and a Doctor of Nursing Practice (DNP) degree is required for programs in nurse anesthesia. In 2004, the American Association of Colleges of Nursing voted to educate all advanced practice nurses (nurse practitioner, nurse anesthetist, clinical nurse specialist, and nurse midwife) as well as the executive level leader at the practice doctorate with the DNP required by 2015.[4] While the 2015 goal has not been met, there has been a significant increase in the numbers of DNP programs throughout the United States.

II. Development of the DNP degree

The interest in DNP education for advanced practice nurses was built upon several happenings within health care. One of these was the push for a higher educated professional among many of the health professions. The medical doctorate (MD) was the first professional doctorate offered in the United States and became the required graduate degree for licensure for physicians in the 1930s[5]. Dentistry was influenced by the Geis Report recommendation in 1926 to offer dentistry at the graduate level with prior undergraduate work similar to that of medical education.[6] Likewise, in the United States practitioners of chiropathy, osteopathy and psychology entered the 21st century requiring a doctoral degree for clinical licensure. The chiropractor obtained a DC degree after completion of a baccalaureate degree and the osteopath a DO degree. Psychologists for a long period required a PhD. However, a practice-oriented degree in psychology was opened in 1968 at the University of Illinois. Five years later, at the Conference on Levels and Pathways of Training, the recommendation was made for two levels of doctoral training, the PhD, which would emphasize research, and the PsyD, which would emphasize clinical training for practice.[7]

The 1990s saw a resurgence of interest in advancing the education of practicing health professionals. This interest was primarily due to the perception that the currently required baccalaureate or masters' degrees were inadequate in meeting practice requirements. In 2000, the American Association of Colleges of Pharmacy began the new century with the requirement that pharmacy degrees be at the professional doctoral level, specifically the PharmD.[8] American Speech-Language-Hearing Association Audiology also recommended in 1992 that the AuD be the entry level degree for audiologists by 2001. As of 2006 there no longer are master's programs in audiology.[9]

The 2000s saw a continuation of interest in advancing the educational levels of practitioners in healthcare. As noted, the American Association of Colleges of Nursing (AACN) voted to move advanced practice nursing to the practice doctorate in 2004. In 2014, the American Association of Occupational Therapy issued a statement requiring a doctoral degree for graduates by 2025, which was supported by the Accreditation Commission for Occupational Therapy Education in 2017. The date moved forward to 2027 soon after.[10] The American Association of Occupational Therapy members challenged this decision, and it was put on hold for the present. In 2015 the clinical doctorate was recommended by the American Speech-Language-Hearing Association (ASHA) as an advanced practice degree, building upon the master's entry degree and guidelines for education were issued.[11] In 2016, this decision was followed by the endorsement of the practice doctorate in physical therapy as the entry level degree by the Commission on Accreditation in Physical Therapy Education.[12] Today the DPT is the entry level degree for physical therapy. Thus, the recommendation by the AACN for the practice doctorate as the entry level degree for advanced practice nursing is consistent with directions being taken by other health professions.

As noted, the reasons for these disciplines to move from undergraduate or master's level education to the practice doctorate included the

perception that the baccalaureate/master's degree did not provide sufficient time to produce a fully competent practitioner. During this period of time, the scope of practice for each of these disciplines expanded. The Institute of Medicine reports on quality and the education of health professionals recommended improvements in the preparation of health professionals.[13,14] Specifically, the health professions report noted "*All health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics.*"[14] Five competencies were recommended for all health professionals, as noted in this statement: patient-centered care, interdisciplinary team approach, evidence-based practice, quality improvement approaches, and informatics. This recommendation introduced education beyond that traditionally offered.

The addition of these five competencies requires both new background information as well as skills in application to patient care. For example, the move to evidence-based practice (EBP) in all the health care disciplines is not a simple process. Effort must be devoted to learning the principles of good design, evaluation metrics, and methods to implement research findings into practice. The move to evidence-based practices has been shown to improve patient outcomes and therefore is an important component of the education of the advanced practice provider.[15] Similarly, education in informatics and emerging technologies, including the use of data to improve care, in team building and management, in implementation science, as well as in state of the science clinical care all require education above and beyond that of the master's level provider.

In addition, we have seen the turnover of knowledge rapidly increase, requiring the provider to continually learn and replace previously learned information. Indeed, the half-life of knowledge in medicine, the time it takes for one-half of information to turnover or be replaced with new information, was noted to be 18 to 24 months in 2017, with the rate continuing to increase.[16] Thus, practitioners also need to learn how to continue to learn and evaluate what they read or hear. Similarly, instructors of these students need to continually update what they are teaching. These more advanced skills support the need for doctorally prepared faculty. Indeed, the 2005 report of the National Research Council Committee for Monitoring the Nation's Changing Needs for Biomedical, Behavioral, and Clinical Personnel indicated that "the need for doctorally prepared practitioners and clinical faculty would be met if nursing could develop a new non research clinical doctorate".[17]

The move to the DNP is consistent with changes in educational directions and the change in degrees required for the health professions. The advanced practice specialties moved forward with plans to require the DNP for practice. In 2007 the Council on Accreditation for nurse anesthesia voted to require DNP education by 2022 and in 2013, the first standards for the entry level doctorate were approved.[18] At the same time, 2007, the American Midwifery Certification Board issued a position statement that it did not support the DNP for entry to practice, and in 2012, the statement was reviewed and endorsed again.[19] In 2008, the National Organization of Nurse Practitioner Faculties endorsed the DNP as entry level education for nurse practitioners, a position it continues to hold although the certifying bodies still accept the MSN.[20] In 2015, the National Association of Clinical Nurse Specialists (NACNS) endorsed, by 2030, the DNP for entry to practice.[21] Thus, as of 2023 nurse anesthesia requires a DNP, clinical specialists will require a DNP by 2030, nurse practitioners are recommended to have a DNP by 2025, and midwives will accept but not endorse the DNP. The American Organization of Nurse Executives (ANOL), a member of the American Hospital Association, has issued a position statement, which states that "nurse leaders at the highest levels of executive leadership are encouraged to seek educational preparation at the doctoral level," but stress the need for master's level programs in nursing leadership at other levels.[22] Thus, the DNP is in varying stages of adoption within the United States.

III. Models of education

There are four different models of education for the DNP program: Baccalaureate degree in nursing (BSN) to DNP, a Master of Science in Nursing (MSN) to DNP with a specialty focus (such as one of the advanced practice registered nurse (APRN) roles, an MSN to DNP with a general focus (such as leadership), and the final model would be an entry level MSN to DNP. The entry level MSN model would be very similar to the BSN-DNP model except for more leadership content. The average credit amounts for the programs vary depending upon the model of education. Most of the MSN-DNP models, excluding the entry level, have approximately 38 credit hours, whereas the BSN-DNP programs average around 74 US credit hours.[23] It should be noted that 1 US credit is equivalent to 2 European Credit Transfer and Accumulation System (ECTS) credits. Therefore, the MSN-DNP would be 76 ECTS credits and the BSN-DNP would be 148.

The AACN State of Doctor of Nursing Practice Education report[23] completed a curricular review of 50 schools from the 384 programs with DNP degrees in 2020. Most schools had both a BSN-DNP and MSN-DNP program (66%). There were more schools with just an MSN-DNP program (24%) versus just a BSN-DNP program (10%). The programs also varied according to specialties offered. In the BSN-DNP programs, the largest number of programs focused on Nurse Practitioner (NP) education (63%) followed by executive leadership (20%). Thirteen percent of programs focused on nurse anesthesia with about 4% focusing on clinical nurse specialist (CNS) education or a generic category.[23] The BSN-DNP programs focused more on the APRN roles, especially that of the nurse practitioner. The MSN-DNP programs were varied but there was a more equal distribution: Nurse practitioner (28%); Executive leadership (28%); General focus not related to a specialty (31%); Generic APRN category (8%); and CNS or nurse anesthesia (3%).

The programs in general follow the essential curricular elements for DNP education as approved and published by the AACN. At present the elements include knowledge for nursing practice; person centered care; population health; scholarship for practice; quality and safety; interprofessional partnerships; systems-based practice; informatics and health care technologies; professionalism; and person, professional, and leadership developments with attention to eight concepts, clinical judgment; communication; compassionate care; diversity, equity, and inclusion; ethics; evidence-based practice; social determinants of health. [24] In addition, each specialty must meet the educational requirements of the specialty as described by the relevant organization. The DNP program, further, requires a culminating project, which typically is a quality improvement project or evidence-based practice change within the clinical setting of interest. The project process and results are finalized in a written product. And, lastly, the student must complete at least 1,000 practicum hours above that completed in their BSN program. This requirement has been interpreted in different ways, such that some of those hours may be spent completing the final project in some programs.

IV. Accreditation and certification

There are multiple accreditation and certification bodies for schools of nursing and advanced practice nurses within the United States. Educational programs may be accredited by the Commission on Collegiate Nursing Education (CCNE), the Accreditation Commission for Education in Nursing (ACEN), or the National League for Nursing Commission for Nursing Education Accreditation (NLN CNEA). The CCNE is associated with the American Association of Colleges of Nursing and the ACEN and CNEA with the National League for Nursing. At the present time 394 DNP programs are accredited by the CCNE,[23] 22 by the ACEN,[25] and 1 by the CNEA.[26] In addition, the midwifery and nurse anesthesia organizations have specific accreditation bodies for those programs. Thus, these two specialties receive two accreditations, the DNP program accreditation and the specialty organization accreditation.

Beyond accreditation is certification for the advanced practice provider. All four advanced practice roles have national certification standards and processes, which permit the individual to practice. The nurse leader has elective certification through the American Nurses Credentialing Center (ANCC). The certification bodies are role specific. For example, the primary care pediatric nurse practitioner is certified by either the American Nurses Credentialing Board (ANCC) or the Pediatric Nursing Certification Board (PNCB) but the acute care pediatric nurse practitioner is certified by the PNCB. The psychiatric mental health nurse practitioner, family nurse practitioner, and adult gerontology primary care nurse practitioner are certified by the ANCC; however, the latter two nurse practitioners also can be certified by the American Academy of Nurse Practitioners Certification Board.[27] The nurse midwife is certified by the American Midwifery Certification Board (AMCB), and the nurse anesthetist is certified by the National Board for Certification and Recertification of Nurse Anesthetists. The adult gerontology acute care nurse practitioner and clinical nurse specialist are certified by the ANCC and American Association of Critical Care Nurses. Each certification body has educational expectations that must be met for the program graduate to sit for certification. Licensure is separate from certification and is granted at the state level. Thus, the advanced practice provider must be a graduate of an accredited program, certified at the national level, and licensed at the state level. With the exception of the nurse anesthetist, none of the certification bodies currently require a DNP nor do they differentiate the MSN from the DNP.

V. The spread of DNP programs in the US

The number of Doctor of Nursing Practice (DNP) programs continues to increase since beginning programs in 2005. As of 2010, there were 156 DNP programs, which has now increased to 394 during the year 2021. The number of enrolled students increased as well from 6,599

students in 2010 to 40,834 in 2021 as well.[23] The growth of programs has been steady since the introduction of the program. There were 50 programs in 2007, just three years after the AACN statement in support of APRN education being at the doctoral level. Five years later there were just under 200. By 2016 the number was approximately 300 and in 2021 the number of programs is just under 400.[23] Thus, there are nearly 100 new programs in each five-year period with an additional 106 in planning.[4] Nurse anesthesia, now required to be at the doctoral level, made a rapid transition, approving no new master's programs beyond 2015 and required enrollment in doctoral programs only as of 2022.

VI. Work environments for the DNP

Nurses prepared at the DNP level work in a variety of positions. The AACN[23] surveyed 875 DNP graduates working as APRNs, executive or administrative position, or faculty. The largest of the APRN groups was the nurse practitioner role (18%) followed by certified nurse midwife (CNM) (8%), the certified registered nurse anesthetist (CRNA) (7%) and the clinical nurse specialist (CNS) at 4%. Nurse Executive and Nurse Administrators were 10% and 11%, respectively. The largest group of DNP graduates were working as faculty members (23%) and 20% were in other positions. [4] Other positions may include pharmaceutical and equipment sales or education, quality assurance, utilization management, and case management.

DNP graduates can also be employed in both inpatient and outpatient settings. All the APRN roles can be found in both areas providing care to diverse patient populations. CRNAs tend to be found in settings that require anesthesia such as the operating rooms in both inpatient and outpatient surgery settings. Nurse practitioners are employed in hospitals, physician offices, and ambulatory care centers.[28] Most CNSs work within hospitals and cover more than one area. Some CNSs cover entire systems reaching out to more than one hospital.[29] With the changes in the healthcare system, CNSs are also moving into ambulatory and primary care settings.[30,31] Certified nurse midwives can be found in both hospital settings and birthing centers. DNP graduates are working in many areas improving the quality of care for patients.

VII. The DNP: Collaborator, subordinate, and independent practitioner

The scope of practice for the advanced practice nurse, at the DNP or MSN level, is determined state by state. For nurse practitioners, 28 states and Washington DC have full practice authority, meaning that licensed nurse practitioners may evaluate, diagnose, and prescribe exclusively under their nursing license.[27] Nurse practitioners employed by the US Department of Veterans Affairs can practice at the top of their license, that is, with full practice authority. Twelve states have reduced practice authority, meaning the licensed nurse practitioner must have a regulated collaborative agreement with a physician in order to practice. And, 11 states have restricted practice authority, meaning the licensed nurse practitioner must be supervised by a physician. The DNP is recommended for nurse practitioners by 2025.

CRNAs may practice without supervision in 34 states.[32] However, the level of independence depends upon the care model followed by the practice setting.[33] The CRNA may be in a fully independent practice or in a collaborative practice in which billing is independent, but anesthesiology is present for consultation. Or the CRNA may be in an Anesthesia Care Model where the CRNA is under the direction/supervision of a physician anesthesiologist. In one state, the CRNA is not recognized as an advanced practice specialty. The DNP is currently required.

Nurse midwives are in a position similar to the CRNAs. In 34 states, the certified nurse midwife can practice independently without a written collaborative agreement or supervision.[34] The scope of practice includes "care during pregnancy, childbirth, and the postpartum period; sexual and reproductive health; gynecologic health; family planning services including preconception care."[35] The DNP is accepted but not required.

The clinical nurse specialist (CNS) is in the unique position of being able to provide care similar to the nurse practitioner in some states and not in others, that is, being authorized to prescribe medication and other therapeutics. The CNS practices independently in 20 states and under a collaborative agreement or supervision in 19 states.[36] Nine states do not permit prescriptive authority, while three states do not recognize the CNS as an advanced practice provider. The clinical specialist organization requires the DNP by 2030.

Thus, with the exception of the CRNA, there is no alteration in practice authority based upon the degree of the advanced practice provider. The MSN and the DNP prepared APRN take the same certification examination, follow the same licensure guidelines within a state, and have the same level of practice authority. One might ask, why then add a year or two of education to the APRN. As noted, the expectations for practice as well as the fount of knowledge required of the APRN has grown substantially. The consensus of the APRN organizations, except for the American College of Nurse-Midwives, is that the DNP is necessary to

meet those practice expectations and three of the four APRN groups are moving in that direction.

VIII. The impact of the DNP on health and healthcare

Little work has been done to date on the impact of the DNP compared with the MSN on patient outcomes. Martsolf and colleagues conducted two studies comparing MSN-prepared and DNP-prepared nurse practitioners. The first study[37] examined practice environment, independence, and roles between the two levels of preparation. Compared to MSN-prepared nurse practitioners (n=1,031), DNP-prepared nurse practitioners (n=117) in primary care practices reported non-significantly more favorable relationships with physicians, less direct patient clinical hours, and more practice leadership hours. The second study by Martsolf et al[38] indicated that no statistical differences were found for emergency department utilization and hospitalization among patients seen by primary care nurse practitioners. Specific clinical outcomes were not investigated. The study, using Medicare claims data, was made up of a sample of nurse practitioners from a combination of states with full, reduced, and restricted practice authority. Further the sample consisted of 677 MSN and only 75 DNP nurse practitioners. The distribution within the states by level of independent practice was not noted.

Regardless, data from Stellflug et al[39] indicated that in rural practice doctorally prepared nurse practitioners feel more prepared for practice than MSN nurse practitioners, although again, the proportion of nurse practitioners reporting doctoral degrees was small. A qualitative survey revealed that the numbers of DNP prepared nurses was too small for employers to compare the impact of the DNP vs. the MSN[40]. In this same survey employers noted that the DNP prepared nurses were more likely to step forward to lead quality improvement initiatives and, thus, contributed to the overall quality of clinical care. Systematic and well-designed studies of the impact of the DNP prepared nurse in all of the specialties are needed to understand how and whether the DNP is meeting the vision for improved quality of care as noted in the beginning of this paper.

IX. Challenges going forward

The challenges to DNP education for nursing are multiple. Included among these are the lack of commitment to the degree by the nursing certification and accreditation bodies, as noted by McCauley et al.[41] At this point, the MSN and the DNP advanced practice nurses sit for the same certification and licensure examinations without differentiation. The DNP is, therefore, not examined on the added elements of their training. Different accrediting and certification bodies have variation in their educational requirements, leaving the consumer uncertain about the preparation of the graduate. In those instances where the clinical doctorate has been accepted, the accreditation body has required it.

The variability in educational practices also poses a challenge. In some programs, for example, the DNP student engages in 1000+ hours of direct clinical practice while in others the DNP student engages in the same number of clinical training hours as the MSN student with additional practicum hours spent on a quality improvement project. Thus, it is difficult to exam any differences in direct clinical practice outcomes at the individual patient level. The numbers of contributors to the educational standards for advanced practice and for the clinical doctorate is problematic. In those cases where the move to the practice doctorate has been successful, there has been a professional consensus on the move and the educational standards.

As noted, the practice setting has had insufficient experience with the DNP to place value on the degree – it is common for the positions to accept either the DNP or the MSN degree for the same position and for the practitioner to receive the same salary. Currently, the majority of advanced practice providers are MSN prepared. As more DNP graduates enter the workforce, it will be easier to identify their unique assets and to evaluate their contributions to the health systems and to the quality of patient care.

Perhaps most challenging to the development of the DNP is the lack of comparison studies, controlling for length of practice and for level of practice authority, to inform both the public and further educational modifications. The limited studies that have been done have used the impressions of employers or graduates themselves. Studies have not controlled for level of practice authority, length of employment, or type of educational program. Evaluation efforts that have been undertaken have not been clear about whether outcomes are focused on individual patient outcomes, the outcomes for populations of patients, or quality metrics for the setting. At present the primary difference between the DNP and the MSN in most, but not all, educational programs is on systems level thinking and quality improvement, rather than on direct clinical practice. Evaluations are needed to determine whether there is an effect in both areas. Funding for the conduct of comparative outcomes studies is limited and health systems do not have easy accessibility to data allowing the assessment of either patient data by

provider or the impact of the individual on broader quality measures. Process changes would provide some support but identifying the individual contribution to those changes is also a challenge. Well-designed and funded comparison studies will be necessary to identify the contributions of the DNP-prepared vs. MSN-prepared provider or leader.

X. Summary

There are many reasons to move health professions, including nursing, to the professional doctorate level. The National Academy of Medicine articulated the necessary additions to health professions education over 20 years ago in their two reports on Quality and on Education. Several professions have taken up the charge and moved to clinical doctorates. Nursing has lagged behind in its adoption. But progress is being made as the various specialty bodies advocate for moving education to the doctor of nursing practice (DNP) and the requirement for additional graduate education. Programs within the United States have been steadily increasing. This trend would benefit from achieving educational consensus among the multiple bodies that control nursing education and specialty certification. The need exists for a compelling evaluation of the impact of the DNP on health outcomes and quality of care that is well controlled and prospective in nature. The DNP has much potential. It is important to see how that potential is being realized and where we need to make course corrections in our educational programs.

Conflicts of Interest Statement

The authors have no conflicts of interest to declare.

References

1. Keeling AW. Historical Perspectives on an Expanded Role for Nursing. *Online J Issues Nurs*. 2015;20(2):2. Published 2015 May 31.
2. Ohio Association of Advanced Practice Nurses. History of NPs in the United States. OAAPN.org. Published June 7, 2021. Accessed April 10, 2023. https://oaapn.org/2021/06/history-of-nps-in-the-united-states/
3. Dellabella, H. 50 years of the nurse practitioner profession. *Clinical Advisor*. Published November 10, 2015. Accessed April 7, 2023. https://www.clinicaladvisor.com/home/web-exclusives/50-years-of-the-nurse-practitioner-profession/
4. American Association of Colleges of Nursing. AACN Fact Sheep – DNP. Aacnnursing.org. Published July 2022. Accessed April 4, 2023. https://www.aacnnursing.org/News-Information/Fact-Sheets/DNP-Fact-Sheet
5. Medline Plus (Internet). Doctor of medicine profession (MD). National Library of Medicine. Published 2021. Accessed April 8, 2023. https://medlineplus.gov/ency/article/001936.htm
6. Institute of Medicine (US) Committee on the Future of Dental Education, Field MJ, eds. Dental Education at the Crossroads: Challenges and Change. Washington (DC): National Academies Press (US); 1995.Field, M. J. (Ed.). Institute of Medicine (US) Committee on the Future of Dental Education. (1995). Dental Education at the Crossroads: Challenges and Change. National Academies Press (US); Washington, DC.
7. Korman M. National conference on levels and patterns of professional training in psychology: The major themes. *American Psychologist*. 1974;29(6):441-449. doi:10.1037/h0036469
8. Evans, A. PharmD or RPh: Does it matter? *Pharmacy Times*. Published Feb 9, 2019. Accessed April 8, 2023. https://www.pharmacytimes.com/view/pharmd-or-rph-does-it-matter
9. Academy of Doctors of Audiology. AU.D. History. Audiologist.org. Accessed April 2, 2023. https://www.audiologist.org/about-us/membership/au-d-history
10. Cahill, A. When will occupational therapy require a doctorate? *Noodle*. Published March 8, 2022. Accessed April 7, 2023. https://resources.noodle.com/nursing-healthcare/occupational-behavioral-therapy/when-will-occupational-therapy-require-a-doctorate/
11. American Speech-language-Hearing Association. Guidelines for the Clinical Doctorate in Speech-Language Pathology. ASHA.org. Published August 2015. Accessed April 3, 2023. https://www.asha.org/academic/guidelines-for-the-clinical-doctorate-in-slp/
12. American Physical Therapy Association. The Clinical Doctorate (or "DPT") Becomes the Only Degree Conferred by CAPTE-Accredited Educational Institutions. Centennnial.APTA.org. Published 2016. Accessed April 1, 2023. https://centennial.apta.org/timeline/the-clinical-doctorate-or-dpt-becomes-the-only-degree-conferred-by-capte-accredited-educational-institutions/
13. Institute of Medicine (US) Committee on Quality of Health Care in America, Kohn LT, Corrigan JM, Donaldson MS, eds. To Err is Human: Building a Safer Health System. Washington (DC): National Academies Press (US); 2000
14. Institute of Medicine (US) Committee on the Health Professions Education Summit; Greiner AC, Knebel E, editors. Health Professions Education: A Bridge to Quality. Washington (DC): National Academies Press (US); 2003. Available from: https://www.ncbi.nlm.nih.gov/books/NBK221528/ doi: 10.17226/10681
15. Connor L, Dean J, McNett M, et al. Evidence-based practice improves patient outcomes and healthcare system return on investment: Findings from a scoping review. *Worldviews Evid Based Nurs*. 2023;20(1):6-15. doi:10.1111/wvn.12621
16. Colacino, D. Medicine in a Changing World. Harvard Medical School News & Research. Published March 2, 2017. Accessed April 8, 2023. https://hms.harvard.edu/news/medicine-changing-world
17. National Research Council (US) Committee for Monitoring the Nation's Changing Needs for Biomedical, Behavioral, and Clinical Personnel. Advancing the Nation's Health Needs: NIH Research Training Programs. Washington (DC): National Academies Press (US); 2005. 6, *Nursing Research*. Available from: https://www.ncbi.nlm.nih.gov/books/NBK22625/
18. Gombkoto RL, Walker JR, Horton BJ, Martin-Sheridan D, Yablonky MJ, Gerbasi FR. Council on Accreditation of Nurse Anesthesia Educational Programs adopts standards for the Practice Doctorate and Post-graduate CRNA Fellowships. *AANA J*. 2014;82(3):177-183.
19. American Colleges of Nurse-Midwives. Position Statement: Midwifery Education and The Doctor

of Nursing Practice (DNP). Midwife.org. Published June 2012. Accessed April 5, 2023. http://www.midwife.org/ACNM/files/ACNMLibraryData/UPLOADFILENAME/000000000079/Midwifery%20Ed%20and%20DNP%20Position%20Statement%20June%202012.pdf

20. National Organization of Nurse Practitioner Faculties. NONPF's NP Role Core Competencies. NONPF.org. Published 2023. Accessed April 10, 2023. https://www.nonpf.org/page/NP_Role_Core_Competencies
21. National Association of Clinical Nurse Specialists. Position statement on the doctor of nursing practice. NACNS.org. Published July 2015. Accessed April 10, 2023. https://nacns.org/advocacy-policy/position-statements/position-statement-on-the-doctor-of-nursing-practice/
22. American Organization for Nursing Leadership. Educational Preparation of Nurse Leaders. *American Hospital Association*. Published 2023. Accessed April 4, 2023. https://www.aonl.org/educational-preparation-nurse-leaders
23. American Association of Colleges of Nursing. The State of Doctor of Nursing Practice Education in 2022. Aacnnursing.org. Published 2022. Accessed April 4, 2023. https://www.aacnnursing.org/Portals/42/News/Surveys-Data/State-of-the-DNP-Summary-Report-June-2022.pdf
24. American Association of Colleges of Nursing. The essentials: core competencies for professional nursing education. Aacnnursing.org. Published 2021. Accessed April 4, 2023. https://www.aacnnursing.org/Portals/42/AcademicNursing/pdf/Essentials-2021.pdf
25. Accreditation Commission for Education in Nursing, Inc. Accredited programs. ACENursing.com. Accessed April 5, 2023. http://www.acenursing.com/accreditedprograms/programsearch.htm
26. The NLN Commission for Nursing Education Accreditation. Accredited programs. CNEA.NLN.org. Published 2023. Accessed April 8, 2023. https://cnea.nln.org/accredited-programs
27. American Association of Nurse Practitioners. State Practice Environment. AANP.org. Updated Oct. 2022. Accessed April 5, 2023. https://www.aanp.org/advocacy/state/state-practice-environment
28. Auerbach DI, Buerhaus PI, Staiger DO. Implications Of The Rapid Growth Of The Nurse Practitioner Workforce In The US. *Health Aff (Millwood)*. 2020;39(2):273-279. doi:10.1377/hlthaff.2019.00686
29. National Association of Clinical Nurse Specialists. The Role of the CNS: Findings from the 2020 Census. NACNS.org. Published 2020. Accessed April 10, 2023. https://nacns.org/wp-content/uploads/2021/03/NACNS-2020-Census-Infographic-FINAL.pdf
30. O'Malley, P. Unit VII. Exemplars of Clinical Nurse Specialist Practice in a Variety of Specialty Areas. In: Fulton J, ed. Foundations of Clinical Nurse Specialist Practice. Springer; 2021: 485-527.Fulton, J. (2021). Foundations of Clinical Nurse Specialist Practice (3rd ed.). Springer Publishing Company; 2021.
31. Negley KD, Cordes ME, Evenson LK, Schad SP. From Hospital to Ambulatory Care: Realigning the Practice of Clinical Nurse Specialists. *Clin Nurse Spec*. 2016;30(5):271-276. doi:10.1097/NUR.0000000000000231
32. National Council of State Boards of Nursing. CRNA Independent Practice Map. NCSBN.org. Published Sept. 7, 2022. Accessed April 11, 2023. https://www.ncsbn.org/nursing-regulation/practice/aprn/campaign-for-consensus/aprn-consensus-implementation-status/crna-independent-practice-map.page
33. Munday, R. CRNA supervision requirements by state. *Nurse Journal*. Published Dec. 18, 2022. Accessed April 9, 2023. https://nursejournal.org/nurse-anesthetist/crna-supervision-requirements/
34. National Council of State Boards of Nursing. CNM Independent Practice Map. NCSBN.org. Published Sept. 7, 2022. Accessed April 11, 2023. https://www.ncsbn.org/nursing-regulation/practice/aprn/campaign-for-consensus/aprn-consensus-implementation-status/cnm-independent-practice-map.page. .
35. American Colleges of Nurse-Midwives. Definition of Midwifery and Scope of Practice of Certified Nurse-Midwives and certified Midwives. Midwife.org. Published Feb. 2012. Updated Dec. 2021 Accessed April 6, 2023. https://www.midwife.org/acnm/files/acnmlibrarydata/uploadfilename/000000000266/Definition%20Midwifery%20Scope%20of%20Practice_2021.pdf
36. National Council of State Boards of Nursing. CNS Independent Prescribing Map. NCSBN.org. Published Sept. 7, 2022. Accessed April 11, 2023. https://www.ncsbn.org/nursing-regulation/practice/aprn/campaign-for-consensus/aprn-consensus-implementation-

status/cns-independent-prescribing-map.page.
37. Martsolf GR, Komadino A, Germack H, Harrison J, Poghosyan L. Practice environment, independence, and roles among DNP- and MSN-prepared primary care nurse practitioners. *Nurs Outlook*. 2021;69(6):953-960. doi:10.1016/j.outlook.2021.06.008
38. Martsolf G, Turi E, Liu J, Chen J, Poghosyan L. DNP preparation of primary care nurse practitioners and clinical outcomes for patients with chronic conditions [published online ahead of print, 2023 Mar 20]. *Nurs Outlook*. 2023;71(3):101951. doi:10.1016/j.outlook.2023.101951
39. Stellflug SM, Buerhaus P, Auerbach D. Characteristics of family nurse practitioners and their preparation for practice in rural vs urban employment settings. *Nurs Outlook*. 2022;70(3):391-400. doi:10.1016/j.outlook.2021.12.007
40. Beeber AS, Palmer C, Waldrop J, Lynn MR, Jones CB. The role of Doctor of Nursing Practice-prepared nurses in practice settings. *Nurs Outlook*. 2019;67(4):354-364. doi:10.1016/j.outlook.2019.02.006
41. McCauley LA, Broome ME, Frazier L, et al. Doctor of nursing practice (DNP) degree in the United States: Reflecting, readjusting, and getting back on track. *Nurs Outlook*. 2020;68(4):494-503. doi:10.1016/j.outlook.2020.03.008