

Academic Degrees and Clinical Practice Characteristics: The University of Washington Physician Assistant Program: 1969-2000

Timothy C. Evans, MD, PhD;^{1,2} Keren H. Wick, PhD;² Douglas M. Brock, PhD;² Douglas C. Schaad, PhD;³ and Ruth Ballweg, MPA, PA-C²

ABSTRACT: *Context:* The physician assistant profession has been moving toward requiring master's degrees for new practitioners, but some argue this could change the face of the discipline. *Purpose:* To see if there is an association between physician assistants' academic degrees and practice in primary care, in rural areas, and with the medically underserved. *Methods:* Surveys were sent to 880 graduates of the first 32 University of Washington physician assistant classes through 2000. Respondents noted their academic degree at program entry and the highest degree attained at any time up to the time of survey. Relationships between practice characteristics and academic degree levels were tested by unadjusted odds ratios and logistic regression after controlling for year of graduation and sex. *Results:* Of the 478 respondents, 54% worked in primary care, about 30% practiced in nonmetropolitan communities, and 42% reported providing care for the medically underserved. Respondents with no degree (33% of total at entry, 24% at survey) were significantly more likely than degree holders to work in primary care and nonmetropolitan areas. Respondents with no degree at program entry were significantly more likely, and those with no degree at the time of the survey were marginally more likely, to self-report work with the medically underserved. *Conclusion:* Respondents with no academic degree are significantly more likely to demonstrate a commitment to primary, rural, and underserved health care. These findings may inform the national debate about the impact of required advanced degrees on the practice patterns of nonphysician providers.

Report, the American Academy of Physician Assistants noted that 61,891 PAs were eligible for practice, and when surveyed, 19% of respondents were working in nonmetropolitan counties and 8% in federally qualified health centers or community health facilities.¹ The American Academy of Physician Assistants' legislative agenda for the 109th Congress included promoting access to health care in underserved communities.² Of the 134 PA training programs in the United States, 131 have Internet sites, on which 104 describe their mission. Of those, 70% state that their mission includes training students to deliver health care to the medically underserved. In recent years, an increasing number of PA training programs have been awarding the master's degree, and there is a growing consensus that a master's degree should be required for PA practice. As the PA profession moves toward this advanced degree requirement for entry into the profession, however, the question has been raised as to whether this will change the PA student applicant pool, the practice patterns of newly trained PAs, and the historic commitment of PAs to care for the medically underserved.

The PA profession was initiated in the 1960s by visionary physicians such as Dr Eugene Stead of Duke

¹Department of Medicine, University of Washington School of Medicine, Seattle, Wash.

²MEDEX Northwest Division of Physician Assistant Studies, Department of Medical Education and Biomedical Informatics, University of Washington School of Medicine, Seattle, Wash.

³Department of Medical Education and Biomedical Informatics, University of Washington School of Medicine, Seattle, Wash.

Health care for rural and underserved populations remains a significant challenge in the United States. The physician assistant (PA) profession has helped address this challenge by providing care in medically underserved communities throughout its 40-year history. In their 2004 Census

The authors wish to thank Eric H. Larson, PhD, for his careful reading of the manuscript and helpful suggestions. For further information, contact: Timothy C. Evans, MD, PhD, FACP, MEDEX Northwest Division of Physician Assistant Studies, University of Washington School of Medicine, 4311 11th Avenue NE, Suite 200, Seattle, WA 98105; e-mail tevans@u.washington.edu.

University and Dr Richard Smith of the University of Washington.³ A central impetus for the conception of the PA profession was to leverage the expertise of Vietnam-era military medics who had not previously been able to use their medical skills in the civilian world after discharge.⁴ These veterans were the core of the first PA student groups and many are still practicing today. This successful strategy was subsequently extended, and historically, many applicants for PA training have worked in other health care professions (eg, nurses, paramedics, community health aides) and bring a rich and varied expertise to PA practice. In fact, many PA training programs have required prior health care experience for admission.

Rigorous medical education leads to certification as a PA. All PA training programs are accredited by the Accreditation Review Commission on Education for the Physician Assistant.⁵ Graduates are certified and recertified every 6 years by the National Commission on Certification of Physician Assistants,⁶ and in all states, continuing medical education is required to maintain licensure. PAs are licensed to practice medicine with and under the supervision of physicians. The support of physicians and state medical societies was vital in establishing this new health care profession. That support has been amply rewarded as the unique and complementary role of the PA concept has matured. Acknowledging their value and beneficial impact on health care, the American College of Physicians recently granted affiliate membership to PAs, the first nonphysician group to be so recognized by the college.⁷

Little is known about the relationship between the academic degrees of nonphysician providers and their clinical practice choices, including primary care and care of the rural and medically underserved. On the basis of interviews with students, faculty, and employers, Fowkes et al suggested that older PA, nurse practitioner, and nurse midwife students from underserved areas who have clearly defined goals, as well as students from programs that explicitly promote underserved medical care, are more likely to practice in underserved areas.⁸ PAs in rural practice have been reported to be older and more likely to be male, from smaller communities of origin⁹, and more concerned with autonomy and reimbursement policy¹⁰ than their urban counterparts. But no recent and systematic survey of these issues has been reported.

We believe that we have an opportunity to add quantitative perspective to this discussion, which is particularly important at this juncture, since although the master's degree requirement is widely debated, it is not a profession-wide standard. As one of the first PA training programs in the United States, MEDEX

Northwest (MEDEX NW; originally derived from *mèdècin extension*), the PA training program at the University of Washington, admitted its first class in 1969. The initial federal demonstration project funding for MEDEX NW had as a specific goal the education of health care providers for underserved populations,¹¹ and this has remained an important focus of the program.¹² By the year 2000, the program had graduated 957 PAs, who were drawn from a variety of backgrounds, with varied academic experience (the prerequisites are specific college-level courses and 4,000 hours of clinical experience) and sophistication, from rural and metropolitan areas, and with varying goals for their professional careers. Regardless of these differences, they all had prior health care experience and were given the same intensive didactic and clinical training. They were not required to achieve an academic degree though many chose to do so either at the time of their PA training or subsequently.

Early surveys of MEDEX NW graduates documented the high percentage in primary care and rural settings.¹³⁻¹⁵ At the 30-year point of the training program, we were particularly interested in the extent to which graduates continued to accept and fulfill the MEDEX NW mission to provide primary care and health care for the rural and urban underserved and the relationship of this clinical focus to the graduates' academic degrees. We discuss these findings in relation to the future direction and impact of the PA profession.

Methods

Graduate Identification and Contact. Data on graduates are kept in the MEDEX NW graduate database. Graduates frequently provide updated contact information as they move, and we periodically follow up in order to maintain current information. There were a total of 957 individuals in the 32 graduating classes surveyed. Of these, 12 were known to be deceased, and an additional 65 were lost to follow-up. A total of 880 surveys were mailed between December 2000 and January 2001. In the spring of 2001, follow-up letters were sent to those who had not yet responded.

This project was submitted to and approved by the University of Washington Human Subjects Division (the University of Washington Internal Review Board). There was no external funding for this activity.

Survey. The survey instrument was an 8-page questionnaire. On the first page, respondents were asked to complete and/or correct demographic details derived from the graduate database. The remaining sections of the survey included questions on pre-MEDEX NW educational and employment experience,

career after graduation (including further academic degrees, current employment data, and practice environment), current issues in the PA profession, family life, and community involvement. A number of questions were adapted from the Physician Worklife Study.¹⁶

Respondents were asked to identify their field or fields of clinical practice (based on 12 possible selections) and to indicate their primary field of practice if they marked more than 1 option. Respondents' practice location was classified as either metropolitan or 1 of 3 nonmetropolitan categories (large town of population 10,000-49,999, small town of 2,500-9,999, or rural of less than 2,500) by matching practice site ZIP code to rural-urban commuting area codes, which differentiate nonmetropolitan census tracts based on their relationship with census urbanized areas and clusters.^{17,18} Respondents were asked to self-report whether they provided medical care for the underserved and whether they were currently practicing in a federally designated medically underserved community.¹⁹ Respondents' ages at entry into the program were calculated based on their birthdates.

Analysis. For data summary, respondents were grouped into 6 graduation year cohorts: 1970-1975, 1976-1980, 1981-1986, 1987-1991, 1992-1996, and 1997-2000. The 12 clinical practice fields in the survey (including "other") were grouped into 4 main categories for purposes of analysis. Primary care consisted of family practice, general internal medicine, and general pediatrics. Emergency/urgent care consisted of emergency medicine and urgent care. Medical and surgical specialties consisted of internal medicine subspecialties, general surgery and surgical subspecialties, obstetrics-gynecology, and pediatric subspecialties. The other category consisted of industrial and occupational medicine as well as all other specialties that were identified. Data from respondents who were retired, not working as PAs, or working as nonclinical PAs were not included in the practice specialty tabulation. We also grouped 6 academic degree categories into 4. No degree consisted of no college and some college. Associate's and bachelor's degrees remained as they were. Master's degree or higher consisted of master's and doctorate degrees.

Several statistical tests were applied (using SPSS statistical software, version 11.0) to screen for significant relationships among characteristics of the respondents including sex, ethnicity, graduate cohort, age, academic degree at program entry, academic degree at the time of the survey, practice specialty, practice community size, and underserved practice. The test used depended on the nature of the variables

being analyzed: χ^2 for comparisons between 2 categorical variables, Mann-Whitney for comparisons between a dichotomous categorical variable and an ordered variable, Kruskal-Wallis for comparisons between a categorical multiple-response variable and an ordered variable, and Spearman's rho for 2 sets of ordered variables. Nonparametric tests were used because the categorical and ordinal nature of the data did not meet the parametric assumptions necessary to run the equivalent parametric tests.

Unadjusted odds ratios and 95% confidence intervals were calculated by standard formulae, and logistic regression analysis after controlling for individual year of graduation and sex was conducted using SPSS. Only data from respondents who were practicing clinically as PAs were included in tests of significance.

Results

Response Rates. We received completed surveys from 478 graduates (54% of 880 surveys sent). Overall, 53% of male graduates and 56% of female graduates responded to the survey. There were no significant differences (by χ^2) in male and female response rates overall nor within the different cohorts.

Characteristics by Graduate Cohort.

Demographics, Career Satisfaction, and Community Service. Among the respondents, 51% were male, the average age at entry into the program was 33.6 years, and the ethnicity was predominantly white (81% of respondents). Overall, 90% of respondents were working clinically as PAs. There was a high level of career satisfaction (mean 4.32 ± 0.08 on a 1-5 Likert scale) reported across all 32 classes of respondents, and 65% overall reported performing community service outside their professional employment.

Academic Degree, Practice Specialty, and Rural and Underserved Practice. The 32 graduating classes surveyed were grouped into 6 cohorts as shown in Table 1. The overall percentages of respondents who entered the program at the various academic degree levels were 33% no degree, 26% associate's degree, 34% baccalaureate degree, and 7% master's degree or higher. The respondents with no degree included 6 respondents with no college experience at entry into the program. These respondents were 5 exmilitary medics who had received all their previous training in the military and 1 nonmilitary person whose previous experience was exclusively clinical. There were 3 foreign medical graduates. There has been a trend among the respondents over the years toward fewer

Table 1. Academic Degrees*†

Graduate Cohort	Academic Degree at Program Entry					Highest Academic Degree Attained				
	No Degree (%)	AA/AS (%)	BA/BS (%)	Master's or Higher (%)	n‡	No Degree (%)	AA/AS (%)	BA/BS (%)	Master's or Higher (%)	n‡
1970–1975	60	17	17	5	58	45	14	19	22	58
1976–1980	33	17	38	12	42	26	10	43	21	42
1981–1986	42	23	32	4	53	36	23	32	9	53
1987–1991	35	27	33	4	48	27	13	46	15	48
1992–1996	31	31	31	8	121	21	15	51	13	121
1997–2000	21	28	43	8	156	15	15	60	10	156
Total	33	26	34	7	478	24	15	47	14	478

*AA/AS, associate of arts or sciences; BA/BS, baccalaureate degree.

† Percentages are within each graduate cohort or overall respondent group ("Total" row). Because percentages were rounded to the nearest whole number, their sum does not always equal 100.

‡ Total number of respondents within each graduate cohort or the overall respondent group ("Total" row).

entering students with no academic degree. Among the students in the 1970-1975 cohort were a large number of returning Vietnam-era medics who had received their medical training in the military, where an academic degree was not required. Nevertheless, even among the most recent cohort, 49% of students had either no academic degree or an associate's degree only at the time of entry into the program. By the time of the survey, a number of graduates had furthered their academic degree standing, so that 24% remained with no degree and 15% had an associate's degree, 47% a baccalaureate degree, and 14% a master's degree or higher.

Across all cohorts (Table 2), 54% of respondents practicing clinically as PAs were working in primary care at the time of the survey. This may be a minimum estimate considering the frequency with which patients seek primary care in urgent care settings and women receive their primary care from gynecologists. There was a slightly higher percentage of respondents in recent cohorts working in emergency care settings, and relatively stable percentages working in medical and surgical specialties.

The distribution of respondents practicing in communities of varying sizes was stable, with about 10% each in rural, small, and large towns, and 70% in metropolitan areas (Table 2). Likewise, across all cohorts, the percentage of respondents who reported providing medical care for an underserved population was stable at an overall average of 42%.

Associations of Academic Degree With Primary Care and Rural and Underserved Practice. Unadjusted odds ratios were calculated for primary care, practice in nonmetropolitan areas, and self-reported underserved

patient care by respondents holding the various academic degrees, both at entry into the program and at the time of the survey. Although many respondents reported these practice characteristics (see Table 2), those with no degree at the time of survey (Table 3) were significantly more likely than those at any of the degree levels to be practicing in primary care (odds ratios, OR [95% confidence intervals, 95% CI] 1.95 [1.22-3.11], $P = .007$). They were also more likely to practice in smaller rather than in larger communities (communities <50,000, OR [95% CI] 1.84 [1.15-2.94], $P = .01$; and communities <10,000, 1.72 [1.00-2.96], $P = .07$) but no more likely to be providing care to underserved patients (OR [95% CI] 1.32 [0.83-2.10], $P = .30$). When similarly examined regarding degree at entry into the program (not shown in table), those respondents with no degree were more likely than those at any of the degree levels to practice in primary care (OR [95% CI] 1.88 [1.23-2.86], $P = .004$), in smaller communities (communities <50,000, OR [95% CI] 2.17 [1.41-3.36], $P < .001$; and communities <10,000, 2.23 [1.35-3.68], $P = .002$), and with underserved patients (OR [95% CI] 1.61 [1.05-2.46], $P = .04$).

In addition to the significant associations of academic degree with primary care and rural and underserved practice, screening tests of other graduate characteristics also revealed a significant association between graduate cohort and academic degree (degree at entry $P = .003$, $H = 14.02$, $df = 3$, $n = 431$; highest degree $P < .001$, $H = 20.90$, $df = 3$, $n = 431$; by Kruskal-Wallis) and between sex and underserved practice ($P = .03$, $\chi^2 = 4.86$, $df = 1$, $n = 401$; by chi-squared). We therefore conducted logistic regression analyses to examine the relationships of academic degree with

Table 2. Practice Specialty and Setting of Respondents in Clinical PA Practice*

Graduate Cohort	Practice Specialty					Rural Status				Underserved Practice		
	Primary Care (%)	Emergency/ Urgent (%)	Medical/ Surgical Specialties (%)	Other (%)	n†	Metropolitan: >50,000 (%)	Nonmetropolitan (%)			n†	%	n†
							Large Town: 10,000-49,999	Small Town: 2,500-9,999	Rural: <2,500			
1970–1975	54	11	22	14	37	69	11	8	11	36	34	32
1976–1980	62	9	18	12	34	74	6	15	6	34	48	29
1981–1986	59	12	18	10	49	67	21	6	6	48	30	46
1987–1991	55	15	28	2	47	70	9	15	6	47	41	41
1992–1996	56	18	20	6	117	66	15	9	10	117	44	109
1997–2000	47	20	22	10	147	75	8	6	12	145	44	144
Total	54	16	21	9	431	70	11	9	10	427	42	401

* Percentages are within each graduate cohort or overall respondent group (“Total” row). Because percentages were rounded to the nearest whole number, their sum does not always equal 100.

† Total number of respondents within each graduate cohort or the overall respondent group (“Total” row) of those practicing clinically as PAs.

primary care, rural practice, and underserved practice after controlling for year of graduation and sex. The significant association remained of no academic degree with primary care (OR [95% CI] 1.80 [1.17-2.75], $P = .007$ for no degree at entry; and 1.84 [1.14-2.96], $P = .01$ for no degree at time of survey) and practice in communities less than 10,000 population (OR [95% CI] 2.35 [1.40-3.95], $P = .001$ for no degree at entry; and 1.83 [1.05-3.20], $P = .03$ for no degree at survey). Likewise, logistic regression analysis showed a significant association of underserved care with no degree at program entry (OR [95% CI] 1.82 [1.17-2.83], $P = .008$) and a marginal association with no degree up to the time of the survey (OR [95% CI] 1.51 [0.93-2.45], $P = .09$).

Discussion

Underallocation of health care providers for rural and medically underserved populations has been a persistent and perplexing health care delivery problem in the United States. Several strategies have been employed to address this problem. Medical students have been recruited from rural areas.^{20,21} Postgraduate residency training programs have provided specific experiences in rural areas, and graduates of these programs have chosen to practice in rural areas in increased numbers.²² Governmental agencies have recognized this health care delivery problem and attempted to affect the practice locales of US physicians with a variety of incentive programs.^{20,23} Historically, PAs have also been part of the solution as they have identified medical care for the rural and underserved

as a core component of their professional mission. Among the respondents to this survey, all of whom had prior health care experience, PAs without academic degrees were more likely to choose primary care careers and care for rural and medically underserved patients.

The MEDEX NW program evolved in parallel with the University of Washington School of Medicine’s WWAMI (Washington, Wyoming, Alaska, Montana, and Idaho) program to increase access to health care education for students throughout the Pacific Northwest.²⁴ Thirty-seven percent of the WWAMI region’s population lives in rural areas. An indication of the program’s success is seen in the 20% of medical school graduates who practice in health professional shortage areas and nearly 50% in primary care.²⁵ The MEDEX NW graduates surveyed here have also responded to the needs of the region—54% of respondents were in primary care practice, 30% worked in nonmetropolitan areas with 19% of respondents practicing in communities with populations less than 10,000, and 42% reported providing medical care for the underserved.

We considered survey respondents’ characteristics that might be associated with primary care and rural and underserved practice. We found a consistent significant association between these practice settings and respondents with no academic degree in contrast to those holding academic degrees. MEDEX NW requires applicants to have substantial prior health care employment (4,000 hours), and community service to be considered for PA training, though unlike a growing

Table 3. Association of Highest Academic Degree Attained at the Time of Survey with Primary Care, Nonmetropolitan Practice, and Care of the Underserved*

	Highest Degree Attained				Total, % (n)
	No Degree (%)	Associate's (%)	Baccalaureate (%)	Master's or Higher (%)	
Practice specialty					
Primary care	66	43	52	48	54 (231)
Emergency/urgent	12	22	18	13	16 (71)
Medical/surgical specialties	15	23	23	25	21 (92)
Other	7	12	7	13	9 (37)
Total practice specialty	100	100	100	99	100 (431)
OR (CI) primary care	1.95 (1.22-3.11)	0.62 (0.37-1.04)	0.91 (0.62-1.33)	0.78 (0.44-1.39)	
P value	.007	.09	.69	.48	
Urban/rural					
Metropolitan: >50,000	60	78	71	72	70 (300)
Nonmetropolitan					
Large town: 10,000-49,999	15	11	10	13	11 (49)
Small town: 2,500-9,999	6	3	11	11	9 (37)
Rural: <2,500	19	8	8	4	10 (41)
Total urban/rural	100	100	100	100	100 (427)
OR (CI) <50,000	1.84 (1.15-2.94)	0.74 (0.41-1.33)	0.84 (0.55-1.27)	0.72 (0.36-1.42)	
P value	.01	.38	.48	.44	
OR (CI) <10,000	1.72 (1.00-2.96)	0.63 (0.30-1.33)	0.94 (0.57-1.54)	0.70 (0.30-1.62)	
P value	.07	.29	.90	.52	
Underserved					
Yes	47	32	44	35	42 (167)
No	53	68	56	65	58 (234)
Total underserved	100	100	100	100	100 (401)
OR (CI) underserved practice	1.32 (0.83-2.10)	0.60 (0.34-1.07)	1.19 (0.80-1.78)	0.73 (0.37-1.41)	
P value	.30	.11	.44	.43	

* Because percentages were rounded to the nearest whole number, their sum does not always equal 100.

number of programs, does not require a prior academic degree. These students, who have already been part of the health care workforce, are highly motivated and have developed their goals for PA careers from firsthand experience. They are sufficiently committed to careers in health care—though not necessarily to achieving academic degrees—to take more than 2 years from their working lives, sacrificing income and family time, to pursue further education. They are slightly older (33.6 years overall, 35.3 years in the most recent cohort) than the national average of current PA students (27.8 years).²⁶ Their choice of primary care (54% of respondents) is also higher than the national average for PAs (39.8%)¹ and of recently graduated medical students. In the 2004 residency match, less than 40% of medical school graduates chose to enter generalist training, with their future careers yet to be determined.²⁷

MEDEX NW students are less likely to have achieved advanced college academic degrees than students in programs with lower prior health care experience requirements and those who are younger

and who proceed directly to PA education from prerequisite study. Across all classes surveyed here, 59% of students had less than a baccalaureate degree at program entry. Even within the most recent cohort, only an additional 26 students eventually earned baccalaureate degrees (increasing the total from 43% to 60% of the cohort) and only 4 additional students earned master's degrees (for a total of 10% of the cohort). For many PA students, who are already experienced in allied health professions, an advanced academic degree is of secondary importance to the concentrated medical training that comprises PA education.

Further study will be required to determine whether the findings of this study of 1 long-standing PA training program and its graduates can be generalized to the PA profession as a whole. There is every reason to pursue this study considering the importance of strategies to increase primary care and care to rural and underserved patients. This is also relevant to the current debate in the PA profession as to the appropriate entry-level degree for PA practice.

In 2000, the Association of Physician Assistant Programs Degree Task Force reported its findings and recommendations. At that time, 32% of PA programs offered a master's degree at completion. The Task Force found that an additional 28 programs intended to change to the master's level and recommended that PA programs grant a credential reflective of graduate-level education.²⁸ By 2004, the Association of Physician Assistant Programs National Recruitment Strategies Task Force survey found that 61% of programs offered the master's degree.²⁹ We have seen similar trends in other health care professions. The master's degree is conferred for social work and occupational therapy, and both pharmacy and physical therapy are making the transition to clinical doctoral degrees. A number of institutions already award a doctoral degree for nurse practitioners and more are considering this change.^{30,31} The 2004 Association of Physician Assistant Programs survey also found that only 9% of programs were specifically recruiting students with prior health care experience and only 7% were recruiting military personnel.²⁹

Within the PA profession there are strong advocates for the position that all PAs should be required to achieve a master's degree for entry into the profession. Others have argued equally forcefully that this would change the face of the PA profession, would discourage many dedicated and experienced applicants from aspiration to PA practice, particularly underrepresented minority and economically disadvantaged individuals, and would adversely affect the historic commitment of PAs to provide medical care for rural and underserved patients.

The data presented here cannot settle this debate; the findings and implications of this survey should be considered and explored further. The underlying question is the following: who are the clinicians who provide care to those who need it most? It may be those who come from the communities of the underserved, those who train in those communities and with those populations, or those who come to medical practice from certain other health care professions or types of community service. The nature of this survey did not allow discrimination of these factors, which may combine with or outweigh academic degree as a predictor of underserved care. All MEDEX NW students have prior health care experience, they are older than the national average, and they complete a 6-month family medicine preceptorship as part of their clinical year requirements. These features may influence the likelihood of primary, rural, and underserved care. In this survey, the respondents' practice specialties and the population size of their practice communities could be reliably identified. However, respondents were asked to self-report

whether they cared for underserved patients, so this is less well quantified overall. Though we believe that the respondents to this survey are reasonably representative of all the graduates, subgroups may be overrepresented considering the 54% response rate. This survey was of graduates from a single training program and they may differ in important ways from graduates of other programs in other geographic and socioeconomic regions of the country. Likewise, the characteristics of PAs who provide primary care and care for rural and underserved patients may differ in other parts of the country. We hope this study will stimulate further investigation of these questions and will contribute to a thoughtful and thorough evidenced-based discussion of the ways PAs can continue to be part of the solution to equitable health care delivery in the United States.

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