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Predoctoral Directors: Who Are They and What Do They Do in These Trying Times?

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Background and Objectives: Family medicine faces declining student interest and funding. Predoctoral directors will help lead efforts to overcome these challenges. Academic success will be important for predoctoral directors to be effective leaders in academic health centers. We therefore sought to describe predoctoral directors and factors associated with their academic success. **Methods:** We carried out a cross-sectional survey of all family medicine predoctoral directors at US allopathic medical schools using a Web-based questionnaire. The response rate was 82%. We measured academic success using a variable combining rank and tenure status. We used bivariate analysis and multiple linear regression analysis to identify factors associated with academic success. **Results:** The mean age of predoctoral directors is 47, and 45% are women. Forty-two percent are assistant professors, 36% associate professors, 20% full professors, and 33% are on a tenure track. Sixty-four percent of predoctoral programs receive Title VII funding, and 63% of predoctoral directors believe that loss of Title VII funding will adversely affect student education. Factors associated with academic success include years since residency, total publications, years as predoctoral director, male gender, state funding for predoctoral family medicine programs, and participation in an academic fellowship. **Involvement in educational research was associated with number of publications.** **Conclusions:** Providing predoctoral directors with the skills and support needed to study their educational undertakings and publish their findings may help them achieve academic success. Medical educators must assess the effects of loss of Title VII funding on predoctoral education while seeking new sources of funding.

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Family medicine, after rapid growth in the 1990s, has entered a period of reflection and new directions. Within academic medical centers, family medicine departments have largely succeeded in developing a stable presence for the specialty, carrying out the threefold mission of clinical service, education, and research.¹ While family medicine departments began with an educational mission largely dedicated to residency training, they now play an important role in medical student teaching. In addition to offering third-year clerkships

and fourth-year electives, family medicine faculty are increasingly involved in teaching multidisciplinary courses in the first 2 years of medical school¹ and are regarded as being effective educators.² Family medicine departments, however, are facing both the challenge of financial uncertainties and decreasing student interest, but also opportunities arising from exciting new directions for family medicine, as outlined in the Future of Family Medicine report.³

The predoctoral program director plays a central role in leading student education activities of most family medicine departments. They develop, implement, and evaluate curricula and supervise other faculty who teach students. A 1994 survey of family medicine predoctoral education directors showed an association between the time predoctoral program directors held their position and percentage of students entering

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family medicine.⁴ More-recent surveys of student education leaders from other disciplines indicate tension among clinical service, teaching and administrative burdens, and the scholarly productivity necessary for promotion.^{5,6}

There are still more challenges facing predoctoral directors—disruption of funding. Title VII has been a primary funding source for family medicine predoctoral education programs. Title VII of the Public Health Service Act is a federal program administered by the Health Resources and Services Administration (HRSA) that funds education in primary care disciplines, including family medicine. Title VII is a target for budget reduction, and HRSA has not had new funding cycles for Title VII in 2005 or 2006. The loss of Title VII could threaten family medicine departments' medical student education programs.⁷

Given the major challenges facing family medicine education and the important role that predoctoral program directors will play in navigating these challenges, we sought to describe the characteristics of predoctoral program directors, including their roles, responsibilities, and factors associated with their academic success.

Methods

The Institutional Review Board at the University of Pennsylvania School of Medicine approved the study protocol and exempted the study from requiring informed consent.

Design and Sample

We conducted a cross-sectional survey of all family medicine predoctoral directors using a Web-based survey tool (Survey Monkey®) in the fall of 2004. The sample consisted of predoctoral program directors at all allopathic medical schools in the United States that have a family medicine department or division. Predoctoral program directors were identified using a database maintained by the American Academy of Family Physicians and by communication over the Family Medicine Predoctoral Directors Network Listserve. We were able to identify predoctoral directors at 108 of the 125 allopathic medical schools in the United States. In October 2004, we sent e-mail requests to 114 individuals at 108 institutions, asking for their participation in the survey and providing a Web link allowing them to complete the questionnaire online using Survey Monkey. We requested that only the predoctoral program director respond from each institution. We sent e-mail reminders with survey links 4 weeks and 10 weeks after the initial e-mailing. We also sent reminders about completing the survey to the Family Medicine Predoctoral Directors Network Listserve.

Instrument

Four predoctoral directors from different institutions developed the questionnaire. Assessment domains were developed based on a review of the relevant literature and previous surveys of predoctoral program directors.⁴ The instrument included questions addressing predoctoral director, departmental, and institutional characteristics; current funding for family medicine student programs (but not for individuals); and predoctoral director and departmental involvement in the medical school. Where appropriate, we used a five-item Likert response, ranging from "strongly disagree" to "strongly agree." We did not ask about the percentage of students entering family medicine, focusing instead on measures of success that have been used in recent surveys of education directors in other disciplines, such as tenure and number of publications.^{6,8} The questionnaire was reviewed by the authors and three other members of the Society of Teachers of Family Medicine (STFM) Group on Predoctoral Education and revised for clarity and content.

Analysis

The Survey Monkey program automatically enters survey responses into an Excel database, which we transferred into the Statistical Package for the Social Sciences software (SPSS v.12.0®) for data analysis. To describe the sample, we calculated means, medians, and standard deviations of continuous variables and frequencies of categorical variables.

We developed a variable to measure academic success, which we defined as a combination of an individual's rank and tenure status. To do this, we created a 12-point scoring system that assigned "1" to instructors, "4" to assistant professors, "7" to associate professors, and "10" to professors. Tenure status was incorporated into the scoring system by adding no points for non-tenured status, 1 point for tenure-track faculty, and 2 points for tenured faculty. Thus, a non-tenured associate professor received 7 points, an associate professor on tenure track received 8 points, and a tenured associate professor received 9 points.

Bivariate analyses were performed to identify relationships between independent variables and the dependent variable, using chi-square, independent samples *t* tests, and Pearson correlations as appropriate. Independent variables with statistically significant associations and those selected *a priori* for entry based on prior studies were then entered into a forward stepwise multiple linear regression analysis where academic success was the dependent variable. We performed a similar analysis using the number of publications as a measure of academic success, ie, as the dependent variable. We also performed another regression analysis, identical to the first, examining associations

of academic success among female predoctoral directors in our sample.

Results

Predocctoral directors from 94 different medical schools responded following the third e-mailing. This yielded a response rate of 82%.

Predocctoral Director Characteristics

Predocctoral directors finished their training, on average, 16 years prior to questionnaire completion, are primarily physicians, and are slightly more likely to be male. Forty-six percent are fellowship trained, and 69% have held prior administrative positions. While 56% are associate or full professors, only one third are in a tenure track position. Predocctoral directors spend, on average, 0.48 full-time equivalents (FTEs) in their predoctoral director role (Table 1).

Predocctoral directors play a number of departmental and institutional roles, such as involvement in clinical preceptorships, the third-year clerkship and family medicine interest group, and participation on institutional curriculum and admission committees (Table 2). Forty-six percent participate in development of the

educational budget within their department. Predocctoral directors maintain limited scholarship activities, with a median of one publication every 2 years.

Support

The resources available to support predoctoral directors in their mission of student education are highly variable (Table 3). There is an average of 1.82 FTE of family medicine faculty time spent on predoctoral education and 1.4 FTE of administrative staff time available to support this mission. Forty percent of programs have a coordinator for predoctoral activities, 51% a clerkship coordinator, and only 19% of programs have both predoctoral and clerkship coordinators. Less than one third of predoctoral directors have access to services of a medical educator. Seventy percent of predoctoral directors perceive that their chair provides adequate support for predoctoral program activities, and 45% believe that their institution provides adequate support for predoctoral programs. Fifty-four percent of predoctoral programs currently receive state funding, 42% receive funding from their medical school, and two thirds of predoctoral programs received Title VII funding from the HRSA. In response to a question about whether loss of funding from HRSA would have a significant impact on the long-term viability of their department's

Table 1
Respondents' Characteristics (n=94)

Variable	n (%)	
Gender		
Male	52 (55%)	
Female	42 (45%)	
Profession		
MD or DO	86 (91%)	
Nonphysician	5 (5%)	
Prior administrative role		
Yes	65 (69%)	
Fellowship trained		
Yes	43 (46%)	
Tenure track		
Yes	31 (33%)	
Academic rank		
Lecturer	2 (2%)	
Assistant professor	39 (42%)	
Associate professor	34 (36%)	
Full professor	19 (20%)	
	<i>Median, Mean, SD</i>	<i>Range</i>
Age	47, 47, 9	32 to 69
Years since residency	16, 16, 9	1 to 41
Years as predoctoral director	5, 6.4, 5	1 to 24
FTE devoted to predoctoral education	.4, .48, .29	.10 to 1.00

SD—standard deviation
FTE—full-time equivalent

Table 2
Predocctoral Director Activities

Variable	n (%)
Curriculum Committee member	61 (65%)
Admissions Committee member	30 (32%)
Student Evaluation and Promotion Committee member	42 (45%)
Faculty Promotion and Tenure Committee member	12 (13%)
Required clerkship	86 (92%)
Family Medicine Interest Group	86 (92%)
Clinical preceptorship (M1 or M2)	51 (54%)
Level of control over departmental predoctoral program budget	
Write and administer	21 (22%)
Give input, don't write but administer	23 (24%)
Stay within budget written with input	12 (13%)
No separate predoctoral budget	19 (20%)
No control	15 (16%)
Involvement in research	
Educational research	69 (73%)
Clinical research	16 (17%)
Any research	73 (78%)
	<i>Median (Range)</i>
Publications, past 2 years	
Journal articles	1 (0 to 25)
Other publications	1 (0 to 11)
Total publications	2 (0 to 32)

predoctoral programs, 63% of predoctoral program directors either strongly agreed or agreed.

Factors Associated With Academic Success

Our constructed measure of success incorporating rank and tenure status had 12 possible levels. In bivariate analysis (Table 4), higher scores were associated with male gender, the number of publications, increasing age, years since residency, employment at a public medical school, current state funding for predoctoral programs, and years as a predoctoral director. There was no association between currently receiving Title VII funding or completion of a fellowship and academic success. Our other measure of academic success, number of publications, was associated with educational research but not clinical research. There were no other variables associated with the total number of publications.

In a forward stepwise linear regression analysis (Table 5), the number of years since residency, number of years as a predoctoral director, number of publications, male gender, current state funding for predoctoral programs, and participation in an academic fellowship were factors associated with an increased likelihood of success. In a separate stepwise linear regression analysis, only involvement in educational research was associated with the number of publications.

In the multiple linear regression analysis limited to female predoctoral directors that explained 55% of the variance in academic success ($R^2=.549$), a longer time since graduation from residency (β -coefficient=.670, $P<.0001$), completion of an academic fellowship (β -coefficient=.496, $P=.001$), and receiving state support (β -coefficient=.282, $P=.037$) were associated with academic success.

Table 3

Support for Predoctoral Activities

	Mean (SD)	Median
Predoctoral physician faculty FTEs	1.07 (1.15)	.75
Predoctoral nonphysician faculty FTEs	.75 (.76)	.5
Predoctoral administrative support staff, FTEs	1.4 (1.3)	1
	<i>n (%)</i>	
Administrative assistant	61 (68.1%)	
Predoctoral program coordinator	41 (43.6%)	
Clerkship coordinator	48 (51.1%)	
Department medical educator	27 (28.7%)	
Institutional medical educators	13 (13.8%)	
Institution or departmental computer support staff for educational activities	63 (67%)	
Chair provides adequate support for predoctoral activities (level of agreement)		
Strongly agree	42 (45%)	
Agree	23 (25%)	
Neutral	17 (18%)	
Disagree	7 (8%)	
Strongly disagree	1 (1%)	
No response	4 (4%)	
Institution provides adequate support for predoctoral activities (level of agreement)		
Strongly agree	11 (12%)	
Agree	31 (33%)	
Neutral	31 (33%)	
Disagree	13 (14%)	
Strongly disagree	4 (4%)	
No response	4 (4%)	
Funding sources		
HRSA grants	60 (64%)	
Department funds	70 (75%)	
State funds	51 (54%)	
Institutional	42 (45%)	
Other*	14 (15%)	

* Private foundations, state academies of family medicine, Area Health Education Center grants, National Institute of Health grants

SD—standard deviation

FTE—full-time equivalent

HRSA—Health Resources and Services Administration

Discussion

Predoctoral directors play a number of important roles in leading medical student programs within both family medicine departments and within their respective schools of medicine. Fully 73% also engage in educational research. Educational and clinical responsibilities compete for the time of many predoctoral directors, who may choose to avoid competing for success in the tenure track. Fewer funding sources and a limited number of journals interested in educational research may make it more difficult for predoctoral directors to publish their work.⁹

Financial Support

While most predoctoral directors believe that their chair provides adequate support for predoctoral programs, only 45% of predoctoral directors believe that their school does. Instead, predoctoral directors rely heavily on Title VII grants and state funds for financial support, in addition to department support. Survey respondents believe that loss of Title VII funding would adversely affect their ability to educate students. Given that the HRSA is the most common extra-departmental funding source for predoctoral programs, the loss of Title VII funding will probably have a significant negative effect on family medicine predoctoral education.

It is not surprising that predoctoral directors who have greater experience and a longer tenure in their role would have greater academic success. Fellowship training was associated with academic success in multivariable analysis, a finding that fits with data indicating increased academic productivity among generalist faculty who have completed a fellowship.¹⁰ Fellowship training was not, however, associated with academic success in bivariate relationship, because its association with success was confounded by its strong inverse relationship with age. While older predoctoral directors are more likely to be successful, they are also less likely to have completed a fellowship.

Title VII has funded the participation of more than 30,000 physicians in faculty development fellowships.¹¹ Loss of Title VII funding may decrease the number of family medicine faculty who have the preparation they will need to be adequately successful.

State funding is associated with predoctoral director success, whereas Title VII funding is not. State funding may be more secure and thus provide predoctoral educators with greater program stability than Title VII support. We only asked about current funding, so predoctoral directors with a longer track record of success in obtaining extramural grant support, who might be more likely to be successful academically, might not have been identified. State funding may indicate the presence of a state mandate for family medicine education and could be a marker for an

Table 4

Bivariate Analysis of Predictors of Predoctoral Director Success

Success defined as combination of rank and tenure status				
Variable		Mean (Combination Rank and Tenure Score)	Correlation Coefficient	P Value
Gender	Male	8.04		<.0001*
	Female	5.17		
Fellowship	Yes	6.93		.56*
	No	6.61		
Educational research	Yes	7.01		.17*
	No	6.13		
Clinical research	Yes	6.38		.46*
	No	6.93		
Medical school type	Public	7.32		.011*
	Private	5.85		
Current Title VII funding	Yes	7.07		.177*
	No	6.27		
Current state funding	Yes	7.61		.001*
	No	5.74		
Total publications			.387	<.0001†
Age			.576	<.0001†
Years since residency			.630	<.0001†
Years as predoctoral director			.628	<.0001†

* t test

† Pearson correlation

institution that values family medicine educators. Interestingly, working at a public institution, per se, was not associated with academic success in multivariable analysis, probably because this variable was so highly correlated with state funding.

Gender

Our finding that women had a lower score on our rank and tenure variable is consistent with previous studies of women in academic medicine showing lower rates of academic promotion and tenure among women than men.¹² However, among women, length of time since graduation from residency, completion of fellowship, and state funding for education programs were associated with academic success. Our small sample size of women likely reduced the number of other factors associated with academic success. Other studies of women in academic medicine have shown that faculty development programs help women succeed in academic environments.^{13,14}

Publications

Finally, predoctoral director success was associated with the number of publications. Scholarly productivity is one of the few independent variables within our model that predoctoral directors have control over and is, as expected, important for promotion and tenure.¹⁵ However, predoctoral directors publish a median of only one journal article every 2 years. This level of academic productivity is comparable to that of internal medicine clerkship directors, who published an average of 2.2 articles over 4 years.⁸ Interestingly, scholarly productivity, as measured by the number of publications, was only predicted by involvement in educational research. Educational research as a scholarly interest area meshes well with the educational and administrative duties of predoctoral directors. Perhaps this natural linkage increases the likelihood that predoctoral directors involved in educational research will publish.

Limitations

The limitations of our study include that our data is all self-reported, and the possibility that different respondents might have understood questions differently. For example, predoctoral directors whose only support staff are both a predoctoral program coordinator and a clerkship coordinator may have chosen to answer the questions about the coordinators differently. Additionally, our cross-sectional data cannot establish causal relationships between academic success and factors associated with success.

Conclusions

Predocutorial directors play important roles in administering and teaching medical student curriculum both within family medicine department activities and in the 4-year medical school curriculum. Those who stay in this position for longer periods, who are engaged in educational research, and who publish are more likely to achieve promotion and tenure. Department chairs who want their predoctoral directors to achieve promotion and tenure should support educational research and scholarship. Predocutorial directors interested in increasing their academic productivity should seek out faculty development programs, educational or research fellowships, writing seminars, mentoring from senior colleagues, and collaboration with colleagues from STFM, the North American Primary Care Research Group, and other professional organizations.

Predocutorial directors rely heavily on Title VII funding to support the educational mission of their

Table 5

Regression Models for Predictors of Predocutorial Director Success

Success defined as combination of rank and tenure status				
Variable	Standardized Coefficient	t Value	P Value	R ² for Model
Years since residency	.436	5.129	<.0001	.698
Total publications	.240	3.482	.001	
Years as predoctoral director	.239	2.889	.005	
Gender	.225	3.211	.002	
Current state funding support	.182	2.654	.002	
Participation in academic fellowship	.141	1.998	.049	
Variables excluded from this model: Title VII funding, involvement in educational research, involvement in clinical research, involvement in any research, type of medical school				
Success defined as total number of publications				
Educational research	.403	6.344	<.0001	.162

departments. Given the uncertain future of Title VII, medical educators and administrators will need to closely monitor the effects of the loss of this funding on family medicine predoctoral education programs and the academic success of predoctoral program directors. State governments are another important source of funding for family medicine education. Family medicine educators can make a strong case that family medicine education, along with other interventions, increases the number of family physicians entering a state's physician workforce.¹⁶ Simultaneously, academic family medicine needs to look for other sources to help fund family medicine's educational mission to train all doctors to have the skills and attitudes to become the best physicians possible, regardless of their specialty choice, and to inspire a new generation of students to be the family doctors of tomorrow.

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