



Prevalence, Plans, and Perceptions: Disability in Family Medicine Residencies

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BACKGROUND AND OBJECTIVES: Leading medical organizations including the Accreditation Council for Graduate Medical Education (ACGME) and American Association of Medical Colleges (AAMC) espouse the value of a diverse physician workforce, including disability, yet there is a dearth of research about this population in graduate medical education (GME). More information is needed on the prevalence of disability in the resident population, plans to recruit residents with disabilities, and program perceptions of barriers to inclusion. The goal of this study was to better understand the prevalence of disability in the resident population, plans to recruit residents with disabilities, and program perceptions of barriers to disability inclusion and frequency of disability-related complaints and litigation.

METHODS: Surveys were emailed to 200 department chairs via SurveyMonkey as part of a larger omnibus survey conducted by the Council of Academic Family Medicine Educational Research Alliance (CERA).

RESULTS: More than 30% of family medicine programs reported at least one faculty member with a disability, while 50% reported matriculating at least one resident with a disability in the previous 5 years. Programs with greater numbers of physicians with disabilities were more likely to have a plan to recruit residents with disabilities, and inadequate expertise was the largest perceived barrier to disability inclusion.

CONCLUSIONS: Employing faculty with disabilities may be the driving force for having an active plan to recruit residents with disabilities. In order to meet the stated diversity goals of medicine, programs will need to increase professional development around disability inclusion.

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organizations espouse the value of a diverse physician workforce, including disability, and have developed guidance⁷ and mandates⁸⁻¹⁰ for increasing diversity, setting disability policy expectations, and for accommodating disabled learners. As such, disability inclusion in residency has become an increasingly important topic.

Despite stated commitments to disability inclusion, there exist few studies on the topic or prevalence of disabled learners in graduate medical education (GME). One Council of Academic Family Medicine Educational Research Alliance (CERA) study focused on faculty with disabilities, showing that almost half (41.9%) of family medicine chairs reported employing a faculty member with a disability.¹¹ The prevalence of residents with disabilities (RWD) is poorly studied, with only a few articles on the topic to date. A 2002 study¹² found that 1.3% of emergency medicine programs reported learners with disabilities, and found that programs with disabled residents were significantly more

Approximately one in six individuals worldwide identifies as a person with a disability,¹ defined by the Americans With Disabilities Act (ADA) as a physical or mental impairment that substantially limits a major life activity² Many of these individuals will seek treatment by family physicians.

Developing a diverse physician workforce that mirrors the patient population is critical to providing more culturally informed care and is a stated goal of medical organizations including the Accreditation Council on Graduate Medical Education (ACGME) and the American Association of Medical Colleges (AAMC).³⁻⁹ These

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likely to report having resources for assisting these learners.

A more recent study of emergency medicine residents conducted after the ADA Amendments Act, where the definitions of major life activities were expanded to include impairments in concentration and other activities,¹³ showed that 26% of programs report having a resident with a disability, for a total prevalence of 4.06%.¹⁴ Additionally, this study suggested that residency programs with disabled residents were more likely to have disability education in their training and that program directors reported more confidence in developing workplace accommodations for physical, psychological, and chronic health disabilities.¹⁴ While GME data on specific prevalence is lacking, a recent publication highlights GME's general lack of compliance with the ACGME's requirement to maintain a disability-related policy for residents and house staff.¹⁵

While there is a dearth of research on disability prevalence in GME, studies in undergraduate medical education (UME) have successfully measured the growth of this population over time, demonstrating that approximately 4.6% of learners in allopathic programs^{16,17} and 4.27% of learners in osteopathic programs¹⁸ disclose a disability. These learners will soon transition to GME, including family medicine residencies. Collecting data on the prevalence of residents with disabilities would provide the first comprehensive understanding of the medical education pathway from UME to GME and into practice in family medicine. Furthermore, in light of the new ACGME requirements for disability policy,⁹ accommodations for residents with disabilities¹⁰ and stated commitments to diversity including disability,⁸ a better understanding of disability in the resident population, and residency programs is needed.

As part of a larger CERA study subsection of questions on disability in family medicine, we sought to (1) identify the prevalence of faculty with disability and residents with

disabilities in family medicine programs over the last 5 years, (2) identify program chairs' perceptions of barriers to disability inclusion, (3) assess active plans to recruit residents with disabilities into family medicine programs, (4) assess the availability of training on the topic of working with residents with disabilities, and (5) identify the number of programs that have experienced disability-related institutional complaints or litigation.

Methods

The survey questions were part of a larger omnibus survey conducted by CERA. The survey was conducted utilizing the standard CERA survey methodology.¹⁹ There were 55 questions in the survey, of which 10 questions were a distinct investigator-initiated subproject surveying family medicine residency programs and disability. A set of 11 demographic questions common to all subprojects were included. Pretesting was done on family medicine educators who were not part of the target population. Questions were modified following pretesting for flow, timing, and readability. The American Academy of Family Physicians Institutional Review Board approved the project in August 2019.

Data were collected from August 2019 to October 2019. The sampling frame for the survey was US Family Medicine department chairs as identified by the Association of Departments of Family Medicine. Surveys were emailed to 200 department chairs via Survey Monkey. One email was out of date, and six participants opted out. We sent four reminders to nonresponders. Two respondents completed only two of the 55 total questions and were dropped from the analysis. The final sample size for department chairs was 191.

All data variables were categorical except for the number of years the respondent has currently served as chair, and the number of full-time equivalents (FTEs) in their department. We used IBM SPSS Statistics Version 26 software to perform

the data analysis for this study. We completed descriptive statistics for the common demographic questions and all of the residency program and disability practices questions. To improve our ability to test for associations, we dichotomized variables. We assessed associations between the reported disability practices of residency programs and the demographics of respondents using χ^2 tests for categorical variables. Fisher exact tests were used if cell sizes of less than five were present with odds ratios reported as a measure of independence. To assess associations between a continuous variable with categorical variables, we used one-way analyses of variance with Tukey honest significant difference post hoc comparisons. We ran all analyses at a two-sided $\alpha=0.05$ significance level.

Results

Respondent Demographics and Department Characteristics

The survey response rate was 53.9% (103/191). Some survey respondents did not complete all questions. Table 1 lists the demographic characteristics of the department chairs. We dichotomized residency program type to condense the community-based programs into one category, and dropped the remaining categories. We collapsed the residency program location into Region 1 and Region 2 to dichotomize the study population into an approximate half-and-half comparison in order to power some of the statistical analyses. Community size was dichotomized to "rural" as less than 75,000, and "urban" as 75,000 or more, as defined by the larger omnibus CERA survey categorization.

Residency Program and Disability Practices

Table 2 shows the frequencies of the responses to the residency program and disability questions and the dichotomized variables for number of RWD; number of faculty with disabilities (FWD); active plan to recruit RWD; and the biggest perceived barrier to inclusion of RWD.

Table 1: Descriptive Statistics of Family Medicine Chairs

Variables		n (%)	
Type of Residency Program		Respondents=102	
Medical school based		45 (44.1)	
Community based, medical school affiliated		23 (22.6)	
Community based, medical school administered		15 (14.7)	
Community based, nonaffiliated		2 (2)	
Other		3 (2.9)	
Don't have a residency		14 (13.7)	
No response		1	
Type of Residency Program (Dichotomous)		Respondents=85	
Medical school based		45 (52.9)	
Community based (includes medical school-affiliated, -administered, nonaffiliated)		40 (47.1)	
Location of Residency (State)		Respondents=103	
New England (NH, MA, ME, VT, RI, or CT)		6 (5.8)	
Middle Atlantic (NY, PA, or NJ)		13 (12.6)	
South Atlantic (PR, FL, GA, SC, NC, VA, DC, WV, DE, or MD)		27 (26.2)	
East South Central (KY, TN, MS, or AL)		6 (5.8)	
East North Central (WI, MI, OH, IN, or IL)		17 (16.5)	
West South Central (OK, AR, LA, or TX)		10 (9.7)	
West North Central (ND, MN, SD, IA, NE, KS, or MO)		9 (8.8)	
Mountain (MT, ID, WY, NV, UT, AZ, CO, or NM)		8 (7.8)	
Pacific (WA, OR, CA, AK, or HI)		7 (6.8)	
Location of Residency (Dichotomous)		Respondents=103	
Region 1 (New England, Middle Atlantic, East North Central, West North Central, Pacific)		52 (50.5)	
Region 2 (South Atlantic, East South Central, West South Central, Mountain)		51 (49.5)	
Variables	n (%)	Variables	n (%)
Community Size	Respondents=98	Community Size (Dichotomous)	Respondents=98
Less than 30,000	5 (5.1)	Rural (<75,000)	15 (15.3)
30,000 to 74,999	10 (10.2)		
75,000 to 149,000	15 (15.3)		
150,000 to 499,999	26 (26.5)	Urban (>75,000)	83 (84.7)
500,000 to 1 million	16 (16.4)		
More than 1 million	26 (26.5)		
No Response	5		
Gender	Respondents=99	Ethnicity	Respondents=93
Male	35 (35.4)	Hispanic/Latino	2 (2.2)
Female	61 (61.6)	Non-Hispanic/Latino	91 (97.8)
Choose not to disclose	3 (3)	No response	10
No response	4		

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Table 1: Continued

Race	Respondents=98	Age		Respondents=99	
American Indian or Alaska Native	1 (1.1)	40-49 years		16 (16.2)	
Asian	7 (7.1)	50-59 years		36 (36.4)	
Black or African American	6 (6.1)	60-69 years		44 (44.4)	
White	77 (78.6)	70+ years		3 (3)	
Choose not to disclose	7 (7.1)	No response		4	
No response	5				
Variable	Respondents	Mean	Std Deviation	Min	Max
Number of all FTEs per department	96	33.46	38.89	0	300

Abbreviation: FTE, full-time equivalent.

Residents and Faculty Members With Disabilities

Of 66 respondents, 33 (50%) reported that they have had no RWD enter their program in the past 5 years, while 28 (42.4%) reported matriculating between one and two RWD. Five programs (7.6%) reported matriculating between three and five residents in the last 5 years, while no programs (0%) reported more than five RWD. Of the 68 chairs who reported data on faculty members with disabilities (FWD), over half, 47 (69.1%) stated they do not have FWD. Seventeen chairs (25%) reported one FWD and four (5.9%) reported more than one FWD.

Active Recruitment for Residents With Disabilities and Faculty Training on Disability Inclusion

When asked whether the department had active plans to recruit RWD, five (7%) chairs responded yes, 51 (71.8%) said no, and 15 (21.2%) stated that they did not know if there was a plan to recruit RWD. When asked if faculty training focused on working with residents with disabilities is available, 30 (42.3%) said no, 18 (25.3%) said yes, and 23 (32.4%) said they did not know.

Perceived Barriers to Disability Inclusion and Litigious Activity

When asked about perceived barriers to inclusion of RWD, 60 chairs responded. Of the known barriers to

inclusion in GME, we hypothesized that cost or resources to support RWD would be the highest perceived barrier in family medicine. Counter to our hypothesis, the majority of chairs reported that inadequate expertise (51.7%; 95% CI: 38%, 64%) was the most prevalent barrier to inclusion of RWD, with only 20 (33%; 95% CI: 22%, 46%) reporting cost or resources to support residents as a barrier. Importantly, attitudinal barriers, prior bad experience, lack of willingness from faculty and fear of patient safety together only accounted for 15% of the total perceived barriers (Table 2).

Of the 71 responses on whether they had experienced litigation or internal complaints involving RWD in the last 4 years, only two program chairs (2.8%) said yes, while 62 (87.3%) said no.

There were no significant results when χ^2 and Fisher's exact tests compared the dichotomized number of RWD in the last 5 years with the number of FWD, community size, residency program type, and residency program region (Table 3).

Having active plans to recruit RWD by the number of FWD was significant ($P = .006$). There were no significant results when active plans to recruit RWD was compared by community size, residency program type, and residency program region (Table 4). Despite the ACGME requirements to develop a recruitment and retention plan for greater

diversity, the majority of programs did not maintain a plan specific to disability. However, programs with greater numbers of physicians with disabilities were more likely to have a plan, suggesting that having FWD may be the driving force for having an active plan to recruit RWD. The correlation between having FWD and having an active departmental plan to recruit RWD suggests that successes with FWD positively informs the decision to recruit more actively RWD.

When considering the largest barrier to inclusion of RWD, analyses included the number of FWD, community size, residency program type, and residency program region. All contingency tables and test statistics are presented in Table 5.

Discussion

Prevalence of Residents and Faculty With Disabilities

The reported 30.9% (95% CI: 20%, 43%) prevalence of family medicine programs with at least one FWD is considerably lower than the 41.9% prevalence reported in the 2015 study.¹¹ Alternatively, this may be due to the variation in how chairs define disability or the reporting of apparent disabilities only, to the exclusion of nonapparent disabilities, despite using the ADA definition of disability in the survey.² Another possible explanation for the decrease in reported prevalence is that family medicine is not actively recruiting

Table 2: Summary of Questions Related to Disability

Variables	n (%)	Variables	n (%)		
Number of Residents With Disabilities (RWD) in Last 5 Years	Respondents=66	Number of Residents With Disabilities (RWD) in Last 5 Years (Dichotomous)	Respondents=66		
None	33 (50)	None	33 (50)		
1	11 (16.7)				
2	17 (25.7)				
3	4 (6.1)				
4 to 5	1 (1.5)				
More than 5	0 (0)				
No response	37	One or more	33 (50)		
Number of Faculty With Disabilities (FWD)	Respondents=68			Number of Faculty With Disabilities (FWD) (Dichotomous)	Respondents=68
None	47 (69.1)			None	47 (69.1)
1	17 (25)				
2	2 (2.9)				
3	1 (1.5)			One or more	21 (30.9)
4	0 (0)				
More than 5	1 (1.5)				
No response	35				
Active Plan to Recruit Residents With Disabilities (RWD)	Respondents=71	Active Plan to Recruit Residents With Disabilities (RWD)s	Respondents=56		
Yes	5 (7)	Yes	5 (8.9)		
No	51 (71.8)				
I don't know	15 (21.2)	No	51 (91.1)		
No response	32				
Biggest Barrier to Inclusion of Residents With Disabilities in Program	Respondents=60	Biggest Barrier to Inclusion of Residents With Disabilities in Program (Dichotomous)	Respondents=60		
Attitudinal	4 (6.7)	attitudinal, lack of willingness from faculty, prior bad experience, fear for patient safety)	40 (66.7)		
Cost/resources to support resident	20 (33.3)				
Lack of willingness from faculty	1 (1.7)				
Prior bad experience	2 (3.3)	Cost/resources to support resident	20 (33.3)		
Fear for patient safety	2 (3.3)				
Inadequate expertise	31 (51.7)				
No response	43				
Training Available to Faculty for Referring Residents to Disclose			Respondents=71		
Yes			18 (25.3)		
No			30 (42.3)		
I don't know			23 (32.4)		
No response			32		
Internal Complaints or Litigation Involving Resident With Disability in Last 4 Years			Respondents=71		
Yes			2 (2.8)		
No			62 (87.3)		
I don't know			7 (9.9)		
No response			32		

Table 3: Number of Residents With Disabilities in Last 5 Years (N=66)

Number of Faculty With Disabilities			
	No Faculty With Disabilities	One or More Faculty With Disabilities	Total
No residents with disabilities	25 (39%)	8 (12%)	33
One or more residents with disabilities	21 (32%)	11 (17%)	32
Total	46	19	65
χ^2 value: 0.806	Degrees of freedom: 1	P value=.369	
Community Size			
	Urban	Rural	Total
No residents with disabilities	29 (45%)	3 (4%)	32
One or more residents with disabilities	27 (42%)	6 (9%)	33
Total	56	9	65
Odds ratio: 0.466	Degrees of freedom: 1	P value=.475	
Residency Program Type			
	Medical School Based	Community Based	Total
No residents with disabilities	20 (31%)	11 (17%)	31
One or more residents with disabilities	16 (25%)	17 (27%)	33
Total	36	28	64
χ^2 value: 1.669	Degrees of freedom: 1	P value=.196	
Residency Program Region			
	Region 1	Region 2	Total
No residents with disabilities	15 (23%)	18 (27%)	33
One or more residents with disabilities	16 (24%)	17 (26%)	33
Total	31	35	66
χ^2 value: 1.669	Degrees of freedom: 1	P value=.196	

* Not all respondents answered each question. We ran χ^2 tests on cases in which the questions of the number of RWD question and the categorical variable of interest were both answered.

** The dichotomization of residency program type resulted in loss of respondents that selected a program type that was not in medical school- or community-based institution.

for disability as part of its efforts toward diversity.

It is noteworthy that out of 66 respondents, half have had residents with disabilities train in their program in the last 5 years. Just over one-quarter (25.8%) stated their program trained two residents with disabilities in the last 5 years. This is a strong benchmark on which to observe the changes in this population in future studies.

Systematic Barriers to Disability Inclusion in GME

A correlation was found between having FWD and having an active departmental plan to recruit RWD. This has significant implications for building and maintaining a pathway

from UME to GME for learners with disabilities. It may be that working alongside a physician with a disability reduces stereotypes and stigma about disability through proximation and shared goals, two tenets of intercontact theory,¹⁹ making faculty more open to the idea of training a resident with a disability.

Limitations

Our study has limitations. Although the study was distributed to all known family medicine chairs, there is a possibility of nonresponse bias. Further, relying on chairs to report disabilities in residents may not result in reliable information as they may not be directly involved in the disclosure of disability or the

determination of accommodations. However, as departmental leaders, chairs should be apprised on the ongoing diversity efforts. This includes the recruitment of diverse population and training focused on diversity inclusion. Chairs, as leaders, should also be aware of the structures in place to allow for disclosure of disability and the filing of grievances.

Due to the variability of disability disclosure practices, there may be RWDs and FWDs that were not included in reporting by respondents because of existing structures in their departments. Questions in this study contained a list of prescribed options; it is possible that important factors were inadvertently omitted. Additionally, while there are

Table 4: Active Plan to Recruit Residents With Disabilities (N=71)

Number of Faculty With Disabilities			
	No Faculty With Disabilities	One or More Faculty With Disabilities	Total
Yes	0 (0%)	4 (7%)	4
No	38 (71%)	12 (22%)	50
Total	38	16	54
Odds ratio: 1.333	Degrees of freedom: 1		<i>P</i> value=.006
Community Size			
	Urban	Rural	Total
Yes	5 (9%)	0 (0%)	5
No	42 (76%)	8 (15%)	50
Total	47	8	55
Odds ratio: 1.190	Degrees of freedom: 1		<i>P</i> value=1.000
Residency Program Type			
	Medical School Based	Community Based	Total
Yes	5 (9%)	0 (0%)	5
No	26 (48%)	23 (43%)	49
Total	31	23	54
Odds ratio: 0.839	Degrees of freedom: 1		<i>P</i> value=.064
Residency Program Region			
	North	South	Total
Yes	3 (5%)	2 (4%)	5
No	24 (43%)	27 (48%)	51
Total	27	29	56
Odds ratio: 1.688	Degrees of freedom: 1		<i>P</i> value=.664

* Not all respondents answered each question. χ^2 and Fisher exact tests were run on cases in which the questions of Active Plan to Recruit Residents With Disabilities and the categorical variable of interest were both answered.

Table 5: Biggest Barrier to Inclusion of Residents With Disabilities (N=60)

Number of Faculty With Disabilities			
Barrier	No Faculty With Disabilities	One or More Faculty With Disabilities	Total
Inadequate expertise	28 (48%)	10 (17%)	38
Cost/resources	15 (26%)	5 (9%)	20
Total	43	15	58
Odds ratio: 0.933	Degrees of freedom: 1		<i>P</i> value=1.000
Community Size			
Barrier	Urban	Rural	Total
Inadequate expertise	33 (56%)	6 (10%)	39
Cost/resources	18 (31%)	2 (3%)	20
Total	51	8	59
Odds ratio: 1.636	Degrees of freedom: 1		<i>P</i> value=.704
Residency Program Type			
Barrier	Medical School Based	Community Based	Total
Inadequate expertise	21 (36%)	17 (30%)	38
Cost/resources	10 (17%)	10 (17%)	20
Total	31	27	58
Odds ratio: 1.235	Degrees of freedom: 1		<i>P</i> value=.785

(Continued on next page)

Table 5: Continued

Residency Program Region			
Barrier	North	South	Total
Inadequate expertise	20 (33%)	20 (34%)	40
Cost/resources	9 (15%)	11 (18%)	20
Total	29	31	60
Odds ratio: 1.222	Degrees of freedom: 1	<i>P</i> value=.788	

* Not all respondents answered each question. χ^2 and Fisher exact tests were run on cases in which the questions of the Biggest Barrier to Inclusion of RWDs and the categorical variable of interest were both answered.

definitions of disability outlined in governing bodies, both federal and in the medical field, the ADA definition used in this study may have differed from those of the respondents' personal and organizational definitions. This may have resulted in different inclusion and exclusion criteria and impacted reporting of the prevalence of RWDs and FWDs.

Conclusion

Family medicine chairs are critical leaders in family medicine, and more broadly in medicine's goal for a diverse physician workforce. Therefore, their support for residents and faculty with disabilities is paramount to creating the opportunities that will generate a physician population that aligns with the population served. As noted in our findings, programs reporting FWD were more likely to have plans to recruit RWD, while the largest perceived barrier to the inclusion of RWD was inadequate expertise. Therefore, we endorse additional opportunities for faculty development that highlight existing guidance on best practices for the inclusion of residents with disabilities,^{7,21} ACGME mandates on disability and diversity inclusion,⁸⁻¹⁰ and literature that shows successful integration of resident accommodations.^{22,23} Actionable and specific goals to include disability must be created if family medicine programs seek to improve their diversity efforts with regard to disabled residents.

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