


# National Prevalence of Disability and Clinical Accommodations in Medical Education

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Journal of Medical Education and Curricular Development  
Volume 7: 1–4  
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DOI: 10.1177/2382120520965249



## ABSTRACT

**BACKGROUND:** This study aimed to evaluate and report the national prevalence of disability across undergraduate medical education (UME) and examine differences in the category of disability, and accommodation practices between allopathic (MD)- and osteopathic (DO)-granting programs.

**METHODS:** Between May 20 and June 30, 2020, 75% of institutional representatives at eligible DO schools responded to a web-based survey. The survey assessed the aggregate prevalence of disabled DO students, prevalence of DO students by category of disability, and prevalence of accommodations granted. Descriptive statistics were used to summarize results. Using 2019 MD data, comparisons were made between MD and DO programs to calculate overall prevalence and differences in accommodation practices across undergraduate medical education.

**RESULTS:** DO-granting programs reported a disability prevalence of 4.27% of the total enrollment. Attention-deficit/hyperactivity disorder (ADHD), psychological disabilities, and chronic health disabilities were reported most frequently. DO-granting programs reported higher rates of ADHD than the MD-granting program. The national pooled prevalence of disability across MD- and DO-granting programs was 4.52%. MD-granting programs reported a higher number of students with disabilities and higher rates of psychological disabilities when compared with DO-granting programs. One hundred percent of DO students disclosing disability received some form of accommodation. General clinical accommodations were more frequently provided in MD-granting programs when compared to DO-granting programs.

**CONCLUSIONS:** This study provides the first comprehensive prevalence of US medical student disability and accommodations. Additionally, these data may serve as a benchmark for DO programs, with implications for curricular development, instructional planning and disability support, and resource allocation in medical education.

**KEYWORDS:** Osteopathic Medicine, Disability, Accommodations, ADA, Medical Education, Prevalence, Students with Disabilities, Learners

**RECEIVED:** August 18, 2020. **ACCEPTED:** September 11, 2020.

**TYPE:** Short Report

**FUNDING:** The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work is partially supported by Health Resources and Services Administration Grant UH1HP29965.

**DECLARATION OF CONFLICTING INTERESTS:** The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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## Introduction

Individuals with disability are an important and growing population in medical education. In 2016, the first comprehensive analysis of disability disclosure in allopathic (MD)-granting programs was published, estimating that 2.7% of MD students reported disability.<sup>1</sup> The 2019 MD data collection from a follow-up study reported a disability prevalence of 4.6%, revealing a 69% relative increase in the growth of MD-students reporting disability.<sup>2</sup> Most notably, psychological disability increased 11.9% and was the largest category of disability reported.<sup>2</sup> Despite this increase, when compared to the general population of medical students screening positive for depressive symptoms (25%–30%),<sup>3</sup> the proportions of medical students reporting psychological disability remains markedly low at 0.3%.<sup>4</sup>

To date, an understanding of the prevalence of disabled medical students and program accommodations has been constrained by the exclusion of parallel data from osteopathic (DO) schools. Building on previous studies, we used the same survey methods<sup>1,2,4</sup> to benchmark prevalence of disability and accommodation practices in DO-granting programs. With the addition of this data we are able to evaluate and report the first national prevalence of disability across US undergraduate medical education (UME) and examine differences in category of disability, and accommodation practices between MD- and DO-granting programs. These data contribute to an awareness of this growing population in UME, and may help educators consider disability inclusion when developing curriculum, instructional methods, and how accommodation may be required for individualized learning.



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**Table 1.** Characteristics of students with disabilities, by school type.<sup>a</sup>

	2020 DO SCHOOL DATA (N=828)		2019 MD SCHOOL DATA <sup>b</sup> (N=2306)		DO VERSUS MD
	NO.	PERCENT <sup>c</sup>	NO.	PERCENT <sup>c</sup>	P-VALUE
Attention deficit/Hyperactivity disorder	277	33.5	672	29.1	.02**
Psychological disability <sup>d</sup>	196	23.7	713	30.9	<.001*
Chronic health disabilities	144	17.4	432	18.7	.42
Learning disability	138	16.7	424	18.4	.29
Mobility disability	37	4.5	84	3.6	.34
Other functional impairment <sup>e</sup>	34	4.1	67	2.9	.12
Visual disabilities	11	1.3	52	2.3	.14
Deaf or hard of hearing	11	1.3	29	1.3	1

\*Significant at  $P < .001$ .

\*\*Significant at  $P < .05$ .

<sup>a</sup>Data are reported for 22 DO schools and 79 MD schools who reported on disability type.

<sup>b</sup>Data for comparison taken from Meeks et al.<sup>2</sup>

<sup>c</sup>Percents of disability type add up to over 100 due to several schools reporting dual disabilities among students.

<sup>d</sup>Psychological disabilities included the following: adjustment disorder, anxiety disorder, obsessive-compulsive disorder, post-traumatic stress disorder, bipolar disorder, depression, eating disorder, cognitive disorder, schizophrenia or other psychotic disorder, and other psychological disability.

<sup>e</sup>Other functional impairment includes disability that is not easily defined by our categories, including missing limbs, complications from pregnancy, and post-concussion syndrome.

## Methods

The American Osteopathic Association Commission on Osteopathic College Accreditation (COCA) accredits 37 osteopathic (DO-granting) medical schools. Following protocol from previous studies,<sup>1,2</sup> five non-fully accredited schools were excluded from our study resulting in 32 eligible schools. Between May 20 and June 30, 2020, a web-based survey was administered to the individual charged with evaluating disability. The survey assessed: (1) prevalence of disabled students, (2) category of disabilities, and (3) accommodations granted. Descriptive statistics were used to summarize results.

Using 2019 MD-program data,<sup>2</sup> comparisons were made between MD and DO program differences in the proportion of students disclosing disabilities (overall prevalence), disability type (within category), and proportion of schools reporting specific accommodations using z-tests specifying a significance level of 0.05. All statistical analyses were conducted in R version 3.5.1. The University of Michigan Medical School Institutional Review Board exempted this study.

## Results

### Prevalence

Twenty-four US DO-granting programs completed the survey (75%). Responding schools were similar to non-responding schools with respect to public versus private status as delineated by COCA.

Within DO-granting programs, respondents reported 907 disabled students—representing 4.27% (95% CI [4.00, 4.55]) of the total enrollment. Similar to the results from MD-granting programs,<sup>2,4</sup> attention-deficit/hyperactivity disorder (ADHD), psychological disabilities, and chronic health disabilities were

reported most frequently (Table 1). DO-granting programs reported higher rates of ADHD (33.5%, 95% CI [30.3, 36.8]) than MD-granting programs (29.1%, 95% CI [27.3, 31.1];  $P$ -value = .02).

The national pooled prevalence of disability across MD- and DO-granting programs was calculated at 4.52% (95% CI [4.38, 4.68]). MD-granting programs reported a higher number of students with disabilities (4.62%, 95% CI [4.45, 4.80];  $P$  = .04), and higher rates of psychological disabilities (30.9%, 95% CI [29.0, 32.9]) when compared with DO-granting programs (23.7%, 95% CI [20.8, 26.7];  $P$ -value < .001).

### Accommodations

One hundred percent of DO students disclosing disability received a form of didactic or clinical accommodations, compared to 93.3% of MD students.<sup>2</sup> General clinical accommodations were more frequently provided in MD-granting programs when compared to DO-granting programs (68.7% vs 21.7% respectively;  $P$ -value < .001) (Table 2).

## Discussion

Our data suggests a comprehensive prevalence of medical student disability across MD- and DO-granting programs at 4.53%. Rates of psychological disability and the provision of clinical accommodations were dramatically higher in MD-granting programs. The higher representation of disclosed psychological disabilities in MD-granting programs may be the result of focused educational efforts on the topic by the Association of American Medical Colleges,<sup>5,6</sup> and recent self-reports of psychological disability and validation of help seeking by MD physicians.<sup>7-9</sup> Indeed, one study suggests that

**Table 2.** Accommodations provided, by school type.

	ALL DO SCHOOLS 2020 (N=23) <sup>a</sup>		ALL MD 2019 <sup>b</sup> (N=84) <sup>a</sup>	
	NO.	PERCENT <sup>c</sup>	NO.	PERCENT <sup>c</sup>
<b>Didactic Accommodation<sup>d</sup></b>				
Testing	23	100.0	84	100.0
Facilitated learning	15	65.2	65	77.4
Ergonomic <sup>e</sup>	3	13.0	30	35.7
Programmatic accommodation <sup>f</sup>	3	13.0	19	22.9
Housing <sup>g</sup>	3	13.0	25	39.0
<b>Clinical Accommodation</b>				
Testing <sup>h</sup>	14	60.9	63	75.0
General clinical <sup>i</sup>	5	21.7*	57	68.7*
Modified clinical procedure <sup>j</sup>	4	17.4	31	36.9
Hearing related <sup>k</sup>	2	8.7	8	9.5
Other	0	0.0	23	27.7

\*Significant at  $P < .001$ .

<sup>a</sup>Data are reported for schools (whose institutionally-designated disability professionals reported complete accommodation data.

<sup>b</sup>Data for comparison taken from Meeks et al.<sup>2</sup>

<sup>c</sup>Percents do not add up to 100 as each school provides several different types of accommodation.

<sup>d</sup>Didactic testing refers to extra time used for exams, use of low distraction or private environments, and testing breaks. Facilitated learning refers to flexible attendance, note takers, Livescribe Pen, recorded lectures, textbooks in alternate formats, text-to-speech, speech-to-text computer programs.

<sup>e</sup>Ergonomic refers to ergonomic evaluation and equipment.

<sup>f</sup>Programmatic Accommodations refers to exceptions from program structure such as decelerated curriculum.

<sup>g</sup>Housing refers to living accommodations such as single room housing, release from housing, assistance or service animals, and reserved parking.

<sup>h</sup>Clinical testing refers to extra exam time within the clinic or an exam reduced distraction environment.

<sup>i</sup>General clinical refers to clinical placement, decelerated clinical year, release from clinic to attend appointments, and release from overnight call.

<sup>j</sup>Modified clinical procedure includes assistive technology, use of a scribe, ability to perform procedural skill or clinical competency in simulation lab and intermediary or assistant to facilitate patient exam.

<sup>k</sup>Hearing-related refers to use of transcriptionist, Communication Access Real-time Translation (CART), sign language interpreter, specialized phone, and specialized pager.

when physician educators share stories of their struggles with mental health, students are more likely to engage in help seeking behaviors, which may include disability disclosure.<sup>10</sup> Finally, the Liaison Committee on Medical Education (LCME), the accreditation body for MD programs, requires schools to excuse students from clinical experiences to seek healthcare, which may contribute to the higher number of psychological disability disclosures and clinical accommodations in MD versus DO programs given the lack of an equivalent requirement from COCA.<sup>11</sup> It is important to note that despite the high prevalence of psychological disability and clinical accommodations in MD programs, the proportion of students reporting psychological disability remains small.<sup>4</sup>

Given the Osteopathic Manipulative Technique (OMT) requirement of DO programs, we had originally predicted that DO programs would see a significantly lower number of students with physical and mobility disabilities. However, there was no significant difference in the prevalence of students reporting chronic health, learning, mobility, or visual disabilities between MD- and DO-granting programs. Despite efforts to educate the field of medical education regarding the importance of inclusion of deaf and hard of hearing students, the

second largest subgroup of disability, the reported prevalence remained equally low in both MD and DO programs.<sup>12</sup>

There is limited information about the experiences of DO students with disabilities, and non-disclosure of disability among both medical student populations may lead to underestimates of this population; however, the use of verified institutional data on disability and the robust response rate in both studies strengthen our findings.

This study provides the first comprehensive prevalence of US medical student disability and accommodations. Additionally, these data serve as a benchmark for DO programs, with implications for curricular development, instructional planning and disability support, and resource allocation in medical education.

As efforts are made to include disability in diversity efforts, future studies should explore (1) differences in disclosure of psychological disability between program type and compared to national reports of depression in medical education, (2) academic performance of students with disabilities across category, (3) disparities in category of disability that grow and those that remain static, and (4) efficacy of clinical accommodations in mitigating disability related barriers.

### Author's Note

Christopher J Moreland is also affiliated with Center for a Diverse Healthcare Workforce The University of California Davis School of Medicine, Sacramento, CA, USA.

### Acknowledgments

We are grateful for the AACOM and Mrs. Jayme Bograd for their assistance in data collection. We are also indebted to the designated disability professionals from the responding DO schools for their attention to detail and time commitment to completing the survey.

In this article, the authors intentionally switch between person-first (e.g., “person with a disability”) and identity-first language (e.g., “disabled person”). This recognizes and respects the variation in preferred language among persons with disabilities.

### Role of the Funders/Sponsors

The Center for a Diverse Healthcare Workforce is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) as part of an award totaling \$3,791,026 with 0% financed with non-governmental sources. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by HRSA, HHS, or the U.S. Government. For more information, please visit [HRSA.gov](https://www.hrsa.gov).

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