

Does the Degree Matter? MD and DO Students Who Match Into OB/GYN Report Different Experiences in US Undergraduate Medical Education

Fei Cai¹, MD
 Sarah Santiago, MD
 Elizabeth Southworth², MD
 Alyssa Stephenson-Famy³, MD

Emily Fay⁴, MD
 Eileen Y. Wang⁵, MD
 R. Nicholas Burns, MD

ABSTRACT

Background Although allopathic (MD) and osteopathic (DO) students have similar curricular requirements, little is known about differences in MD and DO preparedness for obstetrics and gynecology (OB/GYN) residency.

Objective To assess differences in experiences and confidence of MD vs DO students who matched to OB/GYN.

Methods This cross-sectional survey study was open to all fourth-year medical students who matched to OB/GYN in the United States in April 2021. The survey included demographic data, clinical experiences, confidence (5-point sliding scale), and a 11-item knowledge test. Survey responses were compared to assess for disparities in experiences and confidence.

Results Survey response rate was 72.0% (1057 of 1469) students matched to OB/GYN postgraduate year 1 positions. Of the 871 MD and 175 DO responding students, MDs were more likely to have clerkships ≥ 6 weeks (78.1% vs 15.4%; $P < .001$) and a home sub-internship (92.0% vs 53.4%; $P < .001$). DOs reported more hands-on experiences with procedures (MD median=35 [20-35] vs DO median=40 [25-65]; $P = .002$). There was no difference in self-reported confidence in knowledge, technical skills, or having a realistic sense of internship, and no difference in baseline knowledge test scores. DOs felt less confident about their medical school preparation (aOR 0.40; 95% CI 0.25-0.66; $P < .001$) and were more likely to perceive inequity of residency preparation (aOR 1.88; 95% CI 1.18-3.00; $P = .002$).

Conclusions MD students matched to US OB/GYN residency programs reported longer clerkship and more home sub-internships, while DO students reported more hands-on experiences. Despite reporting similar confidence in knowledge and skills, DO students felt less prepared for internship.

Introduction

In July 2020, allopathic (MD) and osteopathic (DO) graduate medical education accreditation systems created a single system for residency programs.¹⁻³ Since this merger, overall Match rates are comparable for US MD and DO seniors.^{4,5} Despite these similarities in the Match, some in the MD community perceive DO schools to be of lower quality and may call into question students' preparedness for residency.^{6,7}

While accreditation systems are different for MDs and DOs, there is some correlation between the Comprehensive Osteopathic Medical Licensing Examination Level 1 and United States Medical Licensing Examination Step 1. However, no head-to-head comparisons between MD and DO student competencies have been made.⁸⁻¹⁰ There is also scant literature

regarding student clinical experiences in MD and DO programs.¹¹⁻¹⁶

With a single system for residency programs, programs must ensure that all students have similar levels of preparedness upon entering internship. Because 15% to 17% of all matched categorical obstetrics and gynecology (OB/GYN) residents have DO degrees, our study aimed to assess self-reported differences in clinical experiences and confidence between MD students vs DO students who matched to OB/GYN residency in the United States. We hypothesized that while there will be no difference in self-reported clinical experience, DO students will have lower self-reported confidence compared to MD students.

Methods

This was a cross-sectional survey in April 2021 of all fourth-year medical students entering a categorical or preliminary internship (postgraduate year 1) in OB/GYN in the United States. Students enrolled in the study as a condition of participating in the

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#OBGynInternChallenge: a remote, multimodal residency preparatory curriculum. The full methods and distribution of this curriculum is described in another work.¹⁷

The authors created the survey to characterize the students' demographics, pre-residency preparatory experiences, learning preferences, and baseline knowledge in OB/GYN (survey provided as online supplementary data).¹⁷ The survey was then piloted on a core group of OB/GYN faculty and OB/GYN residents to assess understanding. Recruitment was done using social media and emails to residency program directors. Participants verified their medical schools and residency acceptance prior to receiving the electronic pre-intervention survey. Log file analysis was used to evaluate email addresses and phone numbers to prevent repeat entries. Only completed surveys were analyzed and only students who completed the surveys were allowed to participate in the curriculum.

Knowledge was assessed using a 12-question assessment (online supplementary data). One question was removed from analysis post-hoc due to multiple correct answers, and total scores were out of 11. Demographic data included age, race/ethnicity, degree type, and length of OB/GYN clerkship. Students reported participation in various clinical experiences, sub-internships, away rotations, and pre-residency boot camps. Baseline confidence in various domains—

medical knowledge, technical skills, and satisfaction with medical school preparation—was assessed using a 5-point sliding scale.

The primary outcomes were difference in MD vs DO students' self-reported experiences in OB/GYN as defined by length of clerkship, ability to participate in home-institution sub-internships, ability to participate in bootcamps, and number of procedural experiences in OB/GYN during medical school, including spontaneous vaginal deliveries (SVDs), hysterectomies, and suturing. Bootcamps are defined as pre-residency training programs that allow students to use simulation and workshops to develop skills for internship.¹⁸ We evaluated whether baseline confidence differed between MD and DO students. Students were also asked about perceived inequity of residency preparation compared to peers. These metrics were measured using a 5-point sliding scale (1=strongly disagree, 5=strongly agree) using a visual slider scale.

Statistical Analysis

Descriptive statistics summarized the data. To illustrate the distribution of clinical experiences, odds ratios were calculated to evaluate group representation in the top and bottom quartile of experiences as well as those who had higher confidence (sliding scale 4 to 5).

TABLE 1

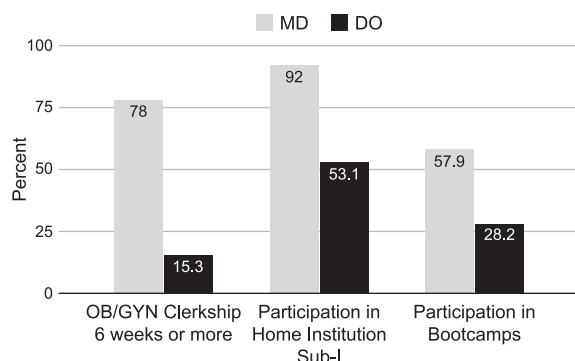
Demographics of the #OBGynInternChallenge for All MD and DO Participants

Demographic (N=1047)	MD (N=872), n (%)	DO (N=175), n (%)	P value ^a
Race			
White	493 (56.5)	119 (68.0)	.10
Asian	119 (13.6)	29 (16.6)	
Black	115 (13.2)	12 (6.9)	
Hispanic/LatinX	99 (11.4)	8 (4.6)	
Alaska/Native	2 (0.2)	0 (0)	
Other	31 (3.6)	2 (1.1)	
Decline	13 (1.5)	5 (2.9)	
Gender identity			
Cis male	77 (8.8)	20 (11.4)	.61
Cis female	777 (89.1)	150 (85.7)	
Trans male	0 (0)	0 (0)	
Trans female	0 (0)	0 (0)	
Queer/Intersex/NB	5 (0.6)	0 (0)	
Decline	13 (1.5)	5 (2.9)	
Baseline knowledge assessment (score out of 11), Mean±SD	6.73±1.67	6.86±1.71	.36

Abbreviations: MD, Doctor of Medicine; DO, Doctor of Osteopathic Medicine; cis, cisgender; trans, transgender; NB, nonbinary.

^a Parametric continuous variables were compared using 2-tailed *t* test.

Note: Nonparametric data were compared using Kruskal-Wallis or chi-square test when appropriate.

**FIGURE**

MD vs DO Self-Reported Experience With Clerkships, Sub-Internships, and Bootcamps

Abbreviations: MD, Doctor of Medicine; DO, Doctor of Osteopathic Medicine; OB/GYN, obstetrics and gynecology; Sub-I, sub-internship.

Note: All *P* values <.001.

Kruskal-Wallis tests were used for nonparametric continuous variables. Pearson's chi-square and Fisher's exact test were used for categorical variables. Student's *t* test was used to compare scores from the knowledge test. All *P* values reported are 2-sided with *P*<.05 considered statistically significant.

Survey data were managed in the University of Washington instance of REDCap (Research Electronic Data Capture). Statistical analysis was performed using STATA 17.1 (StataCorp LLC, College Station TX). The Checklist for Reporting Results of Internet e-Surveys (CHERRIES) guidelines were used in reporting these methods and findings¹⁹ (online supplementary data).

The study was deemed exempt by the institutional review boards of the University of Washington, University of Pennsylvania, and University of Michigan.

Results

One thousand fifty-seven of the 1469 students (72.0%) who matched in OB/GYN in the 2021 National Resident Matching Program completed the pre-intervention survey. Of these, 872 (82.5%) were MD students and 175 (16.6%) were DO students (online supplementary data). There was no difference

in the demographics of those who participated in the survey for the #OBGynInternChallenge compared to nationally available data on demographics of students entering OB/GYN residency in the United States (online supplementary data). There were no differences in terms of race, gender identity, or baseline knowledge scores between MD and DO students (TABLE 1).

A higher percentage of MD students completed an OB/GYN clerkship that was 6 weeks or longer compared to DO students (78.1% [681 of 872] vs 15.4% [27 of 175]; *P*<.001; FIGURE; online supplementary data). A higher percentage of MD students completed a sub-internship in OB/GYN at their home institution compared to DO students (92.0% [802 of 872] vs 53.4% [94 of 175]; *P*<.001). Similarly, more MD students participated in bootcamps than DO students (57.9% [505 of 872] vs 17.1% [30 of 175] *P*<.001). MD students who had access to bootcamps overwhelmingly had them at their home institutions (93.1% [470 of 505]). For DO students, 46.7% (14 of 30) had a bootcamp at their home institution; others accessed a bootcamp through regional programs (53.3% [16 of 30]).

DO students reported more hysterectomy experiences, SVDs, and total experiences overall (TABLE 2). DO students were also less likely than MD students to be in the bottom quartile of hysterectomy experience, SVDs, and total experience overall (online supplementary data).

There was no difference in self-reported confidence between MD and DO students with regards to medical knowledge, technical skills, or having a realistic sense of internship (online supplementary data). However, despite adjusting for clinical experience differences, DO students were less confident about their medical school preparation for residency and more likely than MD students to perceive inequity of residency preparation when compared to their peers (TABLE 3).

Discussion

In this 2021 survey of students matched into US OB/GYN residency programs, MD students reported longer clerkships and greater access to home

TABLE 2

MD vs DO Self-Reported Clinical Hands-On Experience: Average Experiences Per Student

Experiences	MD (N=872), Median (IQR)	DO (N=175), Median (IQR)	<i>P</i> value ^a
Hysterectomies	10 (5-20)	12 (8-22.5)	<.001
Suturing	15 (10-30)	15 (8-30)	.97
Spontaneous vaginal deliveries	5 (2-10)	10 (3-15)	<.001
Total experiences	35 (20-35)	40 (25-65)	.002

^a Nonparametric continuous data compared using Kruskal-Wallis test.

TABLE 3

Self-Reported Confidence in Preparation Between MD and DO Students: Odds of Having Higher Confidence and Feeling Inequity in Residency Preparation Compared to Peers of DO Compared to MD

DO Students	OR (95% CI)	aOR (95% CI)	P value
Medical knowledge	0.99 (0.71-1.40)	1.10 (0.67-1.82)	.69
Technical skills	1.20 (0.86-1.69)	1.13 (0.67-1.90)	.65
Medical school preparation for residency	0.34 (0.24-0.48)	0.40 (0.25-0.66)	<.001
Realistic sense of internship	1.29 (0.93-1.78)	1.15 (0.72-1.84)	.55
Perception of residency preparation inequity when compared to peers	1.67 (1.21-2.32)	1.88 (1.18-3.00)	.008

Abbreviations: MD, Doctor of Medicine; DO, Doctor of Osteopathic Medicine OR, odds ratio; aOR, adjusted odds ratio.

Note: Univariate logistic analysis was done for DO students compared to baseline of MD students; odds of having high confidence in each group as defined by Likert scale 4-5/5. For creation of the multivariable logistic regression model, stepwise regression with backward selection was done for the variables (1) gender identity; (2) age; (3) clerkship length; (4) clerkship length affected by COVID-19; (5) completion of home sub-internship; (6) number of experiences with hysterectomies; (7) number of experiences with suturing; (8) number of experiences with deliveries; (9) total number of experiences; (10) participation or planning for participation in a bootcamp; and (11) race. Final multivariable logistic regression model included all variables except total number of experiences.

sub-internships and bootcamps, while DO students reported more procedural experiences. DO students were less likely to believe that their medical school prepared them well for residency despite reporting similar confidence in knowledge and skills, and realistic expectations of internship compared to MD students.

These findings align with other studies showing differences in perceived adequacy regarding preclinical education among MD vs DO students.²⁰ In this study, baseline knowledge was similar between MD and DO students as well as confidence in knowledge and skills. In residency preparation, the observed difference in confidence persisted after adjusting for clerkship length, completion of home sub-internships, and participation in bootcamps. This suggests that the disparity between DO and MD student preparedness confidence may not be due to decreased access to experiences, but to personal bias regarding DO education.

This study is limited to matched students who may have had different experiences, such as more clinical experiences in DO students, than unmatched students. The survey was not tested in students, and respondents may have interpreted questions differently than intended. This is particularly likely for the reporting of “hands-on” experiences. Because the survey occurred after the match, recall bias may have affected the results in unknown ways. Finally, the survey did not measure actual skills or competence, but perceptions prior to starting residency.

Future studies should explore the content of MD and DO school clinical experiences, relationship of these experiences with resident performance, and correlation between pre-internship confidence with achievement of competencies and milestones during residency.

Conclusions

Our survey study shows substantial differences in self-reported clinical experiences between MD and DO students who matched into US programs. Lower DO student confidence in school preparation for residency was observed, despite DO students reporting higher numbers of procedural experiences and after adjusting for access to formal training (ie, clerkships, sub-internships, and bootcamps).

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Fei Cai, MD, is a PGY-7 Maternal Fetal Medicine Fellow, Hospital of the University of Pennsylvania; **Sarah Santiago, MD**, is a PGY-3 Obstetrics and Gynecology Resident, University of Michigan; **Elizabeth Southworth, MD**, is a PGY-3 Obstetrics and Gynecology Resident, University of Michigan; **Alyssa Stephenson-Famy, MD**, is Associate Professor of Obstetrics and Gynecology and Associate Residency Program Director, Division of Maternal Fetal Medicine, University of Washington Medical Center; **Emily Fay, MD**, is Assistant Professor of Obstetrics and Gynecology, Division of Maternal Fetal Medicine, University of Washington Medical Center; **Eileen Y. Wang, MD**, is Clinical Professor of Obstetrics and Gynecology, Division of Maternal Fetal Medicine, Hospital of the University of Pennsylvania; and **R. Nicholas Burns, MD**, is a PGY-7 Maternal Fetal Medicine Fellow; University of Washington Medical Center.

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Corresponding author: Fei Cai, MD, Hospital of the University of Pennsylvania, fei_cai@alumni.brown.edu, Twitter @fei_cai_md

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