Published in final edited form as:

Obstet Gynecol. 2017 October ; 130(4): 853–861. doi:10.1097/AOG.0000000000002265.

Geographic Comparison of Women in Academic Obstetrics and Gynecology Department-Based Leadership Roles

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Abstract

Objective—To describe and compare geographic representation of women in obstetrics and gynecology department-based leadership roles across American College of Obstetricians and Gynecologists' districts (ACOG districts) and U.S. Census Bureau regions while accounting for the proportion of women practicing in each area.

Methods—We conducted a cross-sectional observational study. In order to more meaningfully quantify representation of women as leaders in ACOG districts and U.S. Census Bureau regions, we calculated representation ratios—the proportion of department-based leaders who were women divided by the proportion of obstetrician–gynecologists who were women. A ratio of 1.0 indicates proportionate representation and <1.0 indicates under-representation. We calculated 95% confidence intervals to compare representation of women in leadership roles across geographic areas. The gender of major department-based leaders (chair, vice chair, division director) and

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Financial Disclosure: The authors did not report any potential conflicts of interest.

Each author has indicated that he or she has met the journal's requirements for authorship.

Presented as a poster at the ACOG Annual Meeting in May 6–9, 2015, in San Francisco, CA.

educational leaders (fellowship, residency, associate residency, medical student clerkship director) was determined from websites.

Results—The proportion of department chairs who were women was highest in the West and lowest in the South Census Bureau regions. Representation ratios for women in major department-based leadership roles demonstrated under-representation relative to the practicing base nationally and in all four regions. While women were under-represented in major department-based leadership throughout the country, there was significantly higher women's representation in major department-based leadership roles in the West (ratio: 0.82; 95% CI: 0.68-0.99) compared to the Northeast (ratio: 0.50; 95% CI: 0.42-0.59) and South (ratio: 0.45; 95% CI: 0.36-0.57). Similarly, in the division director role, the West (ratio 0.85; 95% CI: 0.68-1.1) had significantly higher representation of women compared to the Northeast (ratio 0.50; 95% CI: 0.40-0.62). Nationally, women were under-represented as fellowship directors, proportionately represented as residency program directors, and over-represented as medical student clerkship directors.

Conclusion—Representation ratios of women in major department-based leadership roles, which account for the proportion of women practicing in each geographic area, suggest that women were more likely to advance to the department-based leadership roles of chair, vice chair, or division director in the Western United States.

Introduction

The proportion of all practicing physicians in the United States who are women ranges from 23% in Utah to 40% in Massachusetts (1). Compared to other specialties, a higher proportion of obstetrician–gynecologists (ob-gyns) are women, ranging from 36% in Alabama to 65% in New Hampshire (1). Physicians tend to practice in the state where they were trained; 39% and 47% practice in the state of their undergraduate and graduate medical education, respectively (1). When physicians complete both undergraduate and graduate education in the same state, two-thirds remain there to practice (1). Among ob-gyns, 47% practice in the state where they completed graduate medical education (2). Because geographic mobility is positively associated with career advancement (3), and women tend to move less than men as they get older or reach later career stages (4), location of training has implications for practice location and potentially for career advancement.

Sociologists have noted regional differences in the United States in attitudes toward gender roles, with particular differences seen between southern and northern regions (5). Given that these attitudes may affect women's career advancement, either negatively or positively, our objective was to describe and compare regional differences in the representation of women in obstetrics and gynecology department-based leadership roles across American College of Obstetricians and Gynecologists (the College) districts and U.S. Census Bureau regions. We chose to include both ACOG districts and Census Bureau regions because local leadership roles are often a route to national leadership. However, ACOG districts do not easily cluster into geographic regions (where we hypothesized culture may differ); thus, we also stratified by Census Bureau regions. With representation ratios, we can meaningfully compare women's representation in leadership roles in each area by accounting for the proportion of women in the practicing ob-gyn base.

Materials and Methods

This was a cross-sectional observational study of the gender and geography of department-based leaders relative to practicing ob-gyns in U.S. academic departments of obstetrics and gynecology in the 11 American College of Obstetricians and Gynecologists' districts (ACOG districts) (the Armed Services district was excluded because no data on gender is available) and U.S. Census Bureau regions. The institutional review board at Beth Israel Deaconess Medical Center approved this project. The methods of this study are described in detail elsewhere (6,7). Briefly, a department was included if it had a residency program accredited in 2012–2013 by the Accreditation Council for Graduate Medical Education. We searched departmental websites between November 2012 to October 2013 to determine the gender of individuals in each major department-based leadership role (chair, vice chair, and division director), as well as in the department-based educational leadership roles of fellowship director (maternal-fetal medicine, reproductive endocrinology and infertility, female pelvic medicine and reconstructive surgery, gynecologic oncology, family planning, and minimally invasive gynecologic surgery), residency program director, associate residency program director, and medical student clerkship director. We calculated the proportion of women in each of these roles for each ACOG district and for each district's corresponding U.S. Census Bureau region (8) to compare geographic differences in women's representation in these roles. We then used Association of American Medical Colleges Physician Workforce data from 2013 to determine the proportion of practicing ob-gyns who were women in each ACOG district and the corresponding four U.S. Census Bureau regions—Northeast, Midwest, South, and West (8).

We used a previously reported innovative methodology, the representation ratio, to meaningfully compare geographic differences in women's representation in department-based leadership roles in a way that accounted for the proportion of women in the practicing ob-gyn base (7). To calculate each geographic area's representation ratio for women in leadership roles, we divided the proportion of department-based leaders in that area in 2013 who were women by the proportion of practicing ob-gyns in that area in 2013 who were women. We calculated representation ratios for the three major department-based leadership roles and these three roles combined, as well as for each of the four department-based educational leadership roles, in each ACOG district and corresponding U.S. Census Bureau region. We did not calculate a representation ratio for the four educational leadership roles combined, because previous research suggested that women were under-represented in the fellowship director role, in contrast to the residency and medical student educational leadership roles where women had achieved parity or were over-represented, and combining them would obscure the observed differences for each individual role (6,7).

A representation ratio of 1.0 indicates that women were represented as leaders in the same proportion in which they were present in the practicing ob-gyn base, whereas a ratio less than 1.0 indicates that women were under-represented, and a ratio greater than 1.0 indicates that women were over-represented. Ratios are presented with 95% confidence intervals (CI), which were calculated by treating the representation ratio as a risk ratio. In instances where both bounds of the 95% confidence interval were below or above 1.0, we concluded that women were under-represented or over-represented, respectively, in leadership roles relative

to the proportion of women in the base. All data were analyzed using Stata 9.0 (StataCorp, College Station, TX), and figures were created using GraphPad Prism version 6.05 for Windows (GraphPad Software, La Jolla, CA).

Results

In 2013 in the United States, 50% of practicing ob-gyns were women. District I (Northeast) had the highest proportion of ob-gyns in the practicing base who were women (59%), while District XII (South) had the lowest proportion (40%). Table 1 shows the states within each district and corresponding U.S. Census Bureau region (Figure 1), along with the number of departments and the proportion of women in the practicing ob-gyn base in each district.

Overall, women comprised 28% of major department-based leadership roles. ACOG District IX (West; 47%) and District VI (Midwest; 42%) had the highest proportion of women in the three major department-based leadership roles combined, while District VII (South; 13%) and District III (Northeast; 15%) had the lowest proportions. ACOG District VIII (West; 40%) had the highest proportion of women in the chair role while District XI (South; 7%) had the lowest. Maps with the proportion of women in major department-based leadership roles (combined, chair, vice chair, division director) for each ACOG district are shown in Figure 2.

ACOG District VIII (West; 45%) had the highest proportion of women in the fellowship director role while District XII (South; 0%) had the lowest. For the residency program director role, ACOG District I (Northeast; 75%) had the highest proportion of women, while District III (Northeast; 32%) had the lowest. ACOG District I (Northeast; 100%) had the highest proportion of women in the medical student clerkship director role, while District VII (South; 42%) had the lowest. Figure 3 shows maps with the proportion of women in each ACOG district in each department-based educational leadership role.

Nationally, the representation ratios for women in major department-based leadership roles were significantly less than 1.0 for department chair, vice chair, division director, and for all three roles combined. This indicates that women were under-represented nationally in major department-based leadership roles relative to the proportion of practicing ob-gyns who were women. In individual ACOG districts, women were significantly under-represented in major departmental leadership roles in every district except Districts IX (West) and XII (South) (Figure 4a). In the department chair role, representation ratios were less than 1.0 in every ACOG district; however, in Districts VI (Midwest), VIII (West), IX (West) and XII (South) this under-representation was not statistically significant (Figure 4b). In the vice chair role, representation ratios in individual districts were generally higher than for the chair role, with several districts achieving representation ratios that indicated proportionate representation of women and with confidence intervals crossing 1.0 in every district (Figure 4c). Representation ratios for women in the division director role were less than 1.0 in all districts except District IX (West). However, this under-representation was not statistically significant in Districts VI (Midwest), XI (South) and XII (South) (Figure 4d).

When we compared representation ratios for major department-based leadership roles across U.S. Census Bureau regions, for the three major department-based leadership roles combined (chair, vice chair, division director), women were significantly underrepresented in all four census regions (Figure 4a). While women were under-represented in major department-based leadership throughout the country, there was significantly higher women's representation in major department-based leadership roles in the West (ratio: 0.82; 95% CI: 0.68-0.99) compared to the Northeast (ratio: 0.50; 95% CI: 0.42-0.59) and South (ratio: 0.45; 95% CI: 0.36-0.57). Similarly, in the division director role, the West (ratio 0.85; 95% CI: 0.68-1.1) had significantly higher representation of women compared to the Northeast (ratio 0.50; 95% CI: 0.40-0.62) (Figure 4d). Representation ratios for women in major department-based leadership roles relative to the practicing ob-gyn base in each ACOG district and corresponding U.S. Census Bureau regions are shown in Figure 4.

In educational leadership, overall the representation ratio for women in the fellowship director role was significantly less than 1.0, indicating that women were under-represented nationally as fellowship directors. The representation ratios for women in fellowship director roles were less than 1.0 in all individual ACOG districts, though this under-representation was only significant in District XII (South), where there were no women in the role (Figure 5a). In the residency and associate residency program director roles, the national representation ratios indicated that women were proportionately represented (Figures 5b-5c). In the medical student clerkship director role, the national representation ratio demonstrated that women were significantly over-represented. The representation ratios for women in medical student clerkship director roles exceeded 1.0 in all but District VII (South), and five districts had significant over-representation of women in this role (Figure 5d).

When comparing representation ratios across U.S. Census Bureau regions, we observed that women were significantly under-represented in the fellowship program director role in all areas except the West. Women were significantly over-represented in the West as associate residency program directors and in the Northeast as medical student clerkship directors. While there were no statistically significant differences among Census Bureau regions across educational leadership roles, representation ratios tended to be higher in the West compared to other regions. Representation ratios for department-based educational leadership roles (fellowship director, residency program director, associate residency program director, medical student clerkship director) and corresponding U.S. Census Bureau regions are shown in Figure 5.

Discussion

We used a previously reported innovative representation ratio (7) to meaningfully compare the proportion of women in department-based leadership roles relative to the proportion of women in the practicing ob-gyn base in ACOG districts and U.S. Census Bureau regions. Representation ratios for women in major department-based leadership roles were higher in the West. However, throughout the United States, women were under-represented in all major department-based leadership roles relative to women in the practicing ob-gyn base—even in the West.

Similar to previous findings (6, 7), women were significantly under-represented as fellowship directors—nationally and in the Northeast, Midwest and South. We speculate this under-representation may be related to fewer women entering sub-specialties (9). In contrast, representation ratios for women in residency program director roles showed proportionate representation, and women were actually over-represented as medical student clerkship directors. This may reflect the cultural bias of women becoming teachers (10), and it is not clear if being a residency program or medical student clerkship director is a route to major leadership roles. Some have perceived that leadership roles progress from medical student to residency to fellowship, but our data disputes this, since the majority of medical student clerkship and residency program directors are generalists (6).

Representation ratios in our study suggest that women were more likely to advance to the department-based leadership roles of chair, vice chair, or division director in the West. Representation ratios may better quantify progress in women advancing as leaders. Evaluating proportions of women in leadership roles without accounting for proportions of women in the practicing base may falsely suggest that women are promoted in some regions more than others simply because there are more women practicing in those regions. In a previous study that compared women in department leadership roles across different specialties, obstetrics and gynecology had the largest proportion of leaders who were women, which made it appear that obstetrics and gynecology promoted a higher proportion of women to leadership roles than other specialties. However, comparing progress of women as leaders across specialties using a representation ratio that accounted for the proportion of women entering each field 20 years prior showed there was greater gender parity in Anesthesia and Radiology. Contrary to common perceptions of advancement of women as leaders, Obstetrics and Gynecology was similar to General Surgery and Internal Medicine in promoting women to leadership roles (7).

Our results suggest that the culture in certain geographic regions in the United States can affect leadership opportunities. Perhaps this finding should factor into the decision of where to train, given that training locations often are where physicians ultimately practice, and there may be limitations to future geographic mobility.(1,2). One study found that women were less likely to relocate than men, and the effect of family further dampened women's willingness to relocate to achieve higher career status (11). A study of medical school faculty who were women and attended the Executive Leadership in Academic Medicine program demonstrated a positive association between geographic mobility and career advancement (3). The culture and leaders of academic departments may be influenced by regional attitudes toward gender roles, and this in turn may influence faculty satisfaction, success, and advancement. Regardless of geography, departments that promote equal access to opportunities and resources, work-life integration, freedom from bias, and supportive leadership are conducive to women's academic success (12,13). It is possible that academic culture varies by geography, which may, in part, explain the progress of women in the West Census Bureau region in achieving department-based leadership roles.

Our analysis was limited by small sample sizes of leaders in some districts. In District XII, for example, there were wide confidence intervals for every role and only 47 total leaders, compared to a range of 102–229 leaders in other districts.

Representation ratios can measure pipeline progress in achieving diversity in workforce gender, race, ethnicity, and childhood socioeconomic position, as well as lesbian, gay, bisexual, transgender, and queer faculty. Inclusive attitudes and behaviors of leaders can enable advancement of under-represented faculty by leveraging varied perspectives from those around them (14). Being transparent with measurements such as representation ratios can inspire meaningful progress in achieving leadership diversity (15, 16). Diverse leadership in academic medicine is both a moral imperative and a strategic advantage as a source of innovation and creativity.

Acknowledgments

The authors thank Danielle Duffy from Beth Israel Deaconess Medical Center Media services and Joseph Connelly from Colby College for their assistance with figure preparation.

Funding disclosure: This work was conducted with financial support for study design, data analysis, and data interpretation from Harvard Catalyst | The Harvard Clinical and Translational Science Center (National Center for Research Resources and the National Center for Advancing Translational Sciences, National Institutes of Health Award 1UL1 TR001102-01) and financial contributions from Harvard University and its affiliated academic health care centers.

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Figure 1.
Four Census Bureau regions of the United States: Northeast, Midwest, South, and West.

Figure 2.

Proportion of women in major department-based leadership roles by American College of Obstetricians and Gynecologists' districts: combined (A), chair (B), vice chair (C), and division director (D).

Figure 3.

Proportion of women in department-based educational leadership roles by American College of Obstetricians and Gynecologists' districts: fellowship program director (A), residency program director (B), associate residency program director (C), and medical student clerkship director (D).

Figure 4.

Representation ratios for major department-based leadership roles by American College of Obstetricians and Gynecologists' districts: combined (A), chair (B), vice chair (C), and division director (D).

Figure 5.

Representation ratios for department-based educational leadership roles by American College of Obstetricians and Gynecologists' districts: fellowship program director (A), residency program director (B), associate residency program director (C), and medical student clerkship director (D).

Table 1

American College of Obstetricians and Gynecologists' Districts, Corresponding U.S. Census Bureau Geographic Region, Number of Departments, and Proportion of Women in the Practicing Obstetrician–Gynecologist Base

ACOG District	States	U.S. Census Bureau Region	Number of Departments	Total Ob-Gyns (n)	Proportion Women Ob-Gyns (%)
Collapsed on ACOG District					
I	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	Northeast	16	2,362	59
II	New York	Northeast	33	3,331	52
III	Delaware, New Jersey and Pennsylvania	Northeast	29	3,127	50
IV	District of Columbia, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia	South	30	5,787	50
V	Indiana, Kentucky, Ohio, Michigan	Midwest	28	3,931	49
VI	Illinois, Iowa, Minnesota, Nebraska, North Dakota, South Dakota, Wisconsin	Midwest	21	3,621	55
VII	Alabama, Arkansas, Kansas, Louisiana, Mississippi, Missouri, Oklahoma, Tennessee	South	24	3,969	43
VIII	Alaska, Arizona, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming	West	11	4,236	52.5
IX	California	West	18	4,913	52
XI	Texas	South	16	3,057	47
XII	Florida	South	7	2,267	40
Collapsed on U.S. Census Bureau Region					
I, II, III	Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont	Northeast	77	8,716	53
V, VI, VII	Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin	Midwest	54	8,068	52
III, IV, V, VII, XI, XII	Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia	South	73	14,668	46
VIII, IX	Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming	West	29	9,149	52

ACOG, American College of Obstetricians and Gynecologists; Ob-Gyn, obstetrician–gynecologist.