Background and Aims

Despite a paucity of women occupying leadership positions in academic medicine, studies have shown a higher ratio of female representation in the program director position compared with division chief in multiple specialties. This study aims to determine whether this trend exists in 3-year gastroenterology fellowships in the United States and to evaluate for any factors that may affect these differences.

Methods

In 2015, data were collected for the 163 U.S. gastroenterology fellowship programs including program director, associate program director, division chief, gender distribution, program size, academic center affiliation, and geographic region.

Results

A higher percentage of men than women held the role of program director (82% vs 18%), associate program director (72% vs 28%), and division chief (93% vs 7%). Women in program leadership held lower academic rank than their male counterparts ($P < .0001$). The program director was more likely to be female if the division chief also was female ($P = .03$). Programs with a higher number of trainees tended to be led by a female program director ($P = .06$).

Conclusions

A gender disparity exists in all gastroenterology leadership roles, although the magnitude is smaller for program director and associate program director than the role of division chief. Further studies are needed to investigate the impact of this disparity on promotion and academic productivity.

Previous article in issueNext article in issue

Abbreviations

ASGEthe American Society for Gastrointestinal Endoscopy

Traditionally, women have been underrepresented in all fields of medicine, although the gender gap has been slowly decreasing over the past few decades. According to data from the Association of American Medical Colleges Physician Specialty Data Book, in 2013, women comprised 46% of trainees across all specialties, 35% of gastroenterology trainees, and 15% of practicing gastroenterologists.1 This is in comparison to 10 years ago, when only a quarter of first-year gastroenterology fellows were women.2,3 In recent years, although there is more gender parity for medical school applicants, matriculates, and residents across all specialties, the proportion of female academic faculty is only 38%.4 This percentage decreases even further with higher academic rank; women account for only 21% of full professors, 16% of medical school deans, and 15% of department chairs.4 Among full-time faculty, the only academic rank in which women outnumbered men was the clinical instructor level—the lowest rank.4

This gender disparity also is seen in the field of gastroenterology. A study by

Burke et al5 surveyed gastroenterology fellows 3 years, 5 years, and 10 years after graduation and showed that there was a larger proportion of women in academic practice at all time points surveyed5,6; however, even at 10 years after graduation, they had significantly lower academic ranks, with 30% holding the rank of associate professor as compared with 58% of their male counterparts, and no women holding the rank of full professor as compared with 10% of men.6 Studies across other subspecialties have shown that women are underrepresented in all major department-based leadership roles but are not underrepresented in the residency program director role.7 In general surgery, women comprise 10% of residency program directors but only 3% of department chairs.8

It is known that women are underrepresented in gastroenterology faculty positions and higher academic ranks; however, less is known about female representation in fellowship program leadership. In this study, we aim to quantify gender representation in gastroenterology fellowship program leadership and compare it to the disparity seen in the division chief role, as well as find any associated factors that may contribute to the potential disparities.

Methods

This study was exempt from institutional review board approval because all of the data analyzed were publicly available. A list of all 3-year allopathic gastroenterology fellowship programs in the United States was obtained from the American College of Gastroenterology and the Association of American Medical Colleges Web sites and cross compared for accuracy. Each program Web site was then accessed, and the names, gender, and academic rank (professor, associate professor, assistant professor, or clinical instructor) for the program director, associate program director, and division chief for each program were recorded. Program-specific information, including program size (number of trainees and faculty), academic affiliation, and geographic region, was collected for each program. If the information was incomplete on the program Web site, attempts were made to obtain the missing data by using a standard Internet search engine, Doximity, and LinkedIn. Departmental Web site photographs were used to determine the gender of the physician; if no photograph was available, gender information was collected from publicly available Healthgrades Web sites. All data were collected over a 2-month period in the summer of 2015.

The Fisher exact test was used to evaluate the association among gender of the program director, associate program director, and division chief. Similarly, it was used to assess any relationship with their academic ranks and the geographic region of the program. A chi-square test was used to evaluate the association between the gender of the program director and associate program director with geographic region, as well as the association between the gender of the associate program director and of the program director. A Wilcoxon rank-sum test was used to determine the association among the gender of the program director, associate program director, and division chief and the size of the program in terms of number of trainees as well as number of faculty members.

Results

A total of 163 3-year allopathic gastroenterology fellowship programs were found on the American College of Gastroenterology and Association of American Medical Colleges Web sites. All of these programs listed a fellowship program director, whereas only 107 listed an associate program director, and 150 listed a division chief. Women were found to be underrepresented in all of these roles (Table 1).

Table 1. Female representation in gastroenterology leadership positions

Role	No. of women (%)	No. of men (%)	Total
Program director	29 (17.8%)	134 (82.2%)	163
Associate program director	30 (28%)	77 (72%)	107
Division chief	11 (7.3%)	139 (92.7%)	150

For the 163 program directors, there were fewer women than men holding the position of program director (18% vs 82%). Academic rank was found for 145 of the fellowship program directors. Female program directors held a lower academic rank when compared with their male counterparts (P = .0187) (Fig. 1). Among the 27 female program directors with a listed academic rank, 52% (n = 14) were assistant professors, 33% (n = 9) were associate professors, and 15% (n = 4) were full professors. There were 118 male program directors with a listed academic rank, 3% (n = 3) were clinical instructors, 26% (n = 31) were assistant professors, 33% (n = 39) were associate professors, and 38% (n = 45) were full professors.

Academic rank of gastroenterology fellowship program directors
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Figure 1. Academic rank of gastroenterology fellowship program directors.

Only 107 fellowship programs listed an associate program director. Similarly to the role of program director, there were fewer women holding this position compared with men (28% vs 72%). Academic rank was found for 88 of the associate program directors, and again, female associate program directors held a lower rank than men (P = .0032) (Fig. 2). Among the 26 female associate program directors, 4% (n = 1) were clinical instructors, 85% (n = 22) were assistant professors, 12% (n = 3) were associate professors, and none were full professors. Of the 62 male associate program directors with a listed academic rank, 3% (n = 2) held the rank of clinical instructor, 55% (n = 34) held the rank of assistant professor, 16% (n = 10) held the rank of associate professor, and 26% (n = 16) held the rank of full professor. There was no association between the associate program director gender and the gender of the program director (P = .2390) or the gender of the division chief (P = 1.000).

Academic rank of gastroenterology fellowship associate program directors
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Figure 2. Academic rank of gastroenterology fellowship associate program directors.

A division chief was listed for 150 of the 163 programs. The division chief was female in only 11 programs (7%), whereas 139 programs (93%) had a male division chief. Academic rank was found for 141 of the chief positions. Women had a lower academic rank than their male counterparts: 27% of women versus 7% of men were

assistant professors; 18% of women versus 14% of men were associate professors, and 55% versus 79% were full professors. This was statistically significant, with a P value of .049 (Fig. 3).

Academic rank of gastroenterology division chiefs
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Figure 3. Academic rank of gastroenterology division chiefs.

A significant association was found between the gender of the fellowship program director and the gender of the division chief (P = .0327). It was more likely that a woman held the role of program director if the division chief was also female. For the 11 programs with a female division chief, 45% (n = 5) had a female fellowship director as compared with 54% (n = 6) with a male program director. Of the 139 programs with a male division chief, 17% (n = 23) had female program directors and 83% (n = 116) had male program directors (Fig. 4). There was no significant association between the gender of the division chief and the gender of the associate program director (P = 1.000).

Fellowship program director gender broken down by the gender of their division…
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Figure 4. Fellowship program director gender broken down by the gender of their division chiefs.

Training program size, as defined by the number of gastroenterology trainees, was found for 113 of the 163 fellowship programs. Programs with a female program director tended to have a higher number of trainees (mean of 12 trainees, maximum 24) when compared with programs with a male program director (mean of 9 trainees, maximum 23), although this was not statistically significant (P = .0604) (Fig. 5). There was no significant association between the number of trainees and the gender of the associate program director (P = .1221); there was also no association between the number of faculty and the gender of the program director (P = .8870) or the associate program director (P = .1795).

Program size by gastroenterology fellowship director gender
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Figure 5. Program size by gastroenterology fellowship director gender.

Geographic region was not found to be a significant factor for any of the leadership positions (program director; P = .2770, associate program director; P = .2996, division chief; P = .4928).

Discussion

This study demonstrates that women are significantly underrepresented in the roles of gastroenterology fellowship director and associate program director. Similarly to prior studies in other specialties such as surgery, obstetrics-gynecology, and pediatrics, the proportion of women in fellowship leadership roles was higher than the proportion of those in a division chief role.7 Women across all roles held a lower academic rank than their male counterparts. The gender of the division chief

had a significant impact on the gender of the fellowship program director. No other factors had a significant association with gender. One may argue that because women made up only 15% of practicing gastroenterologists, according to 2013 Association of American Medical Colleges data, having 18% female program directors is actually an overrepresentation of women in a leadership role. However, studies have shown that a larger percentage of women go into academics than do men.5,6 Diamond et al9 found 24% of gastroenterology academic faculty to be women. This confirms that women are underrepresented in leadership roles in gastroenterology.

The most surprising aspect of our results is the large degree of difference between gender representation of the fellowship directors based on whether there was a male or female division chief. This could support the idea of mentorship playing a significant role in career advancement. Women in senior leadership roles may be more likely to promote other women, or perhaps seeing a woman in senior leadership empowers junior women to seek promotion. Further review of the data shows that of the 5 programs that had both a female division chief and a female program director, they were the same person 100% of the time. The other 6 female division chiefs all had male program directors. This contradicts the theory of mentorship leading to career advancement. It is unclear from our data what factors influenced and enabled this very small percentage of women to have been able to reach the top echelon of academic leadership.

The reasons for the persistent gender disparity in gastroenterology leadership are unclear and likely multifactorial. One possibility may be decreased institutional support for career advancement of women as compared with men. For example, studies have shown that women receive less research funding, have fewer available mentors, and are paid less than men. Women also reported more difficulty in the tenure process than men and were less likely to promote themselves or ask for advancement.6 This trend may be changing, as seen in a recent study that found that there was a higher proportion of women who requested appointments to American Society for Gastrointestinal Endoscopy (ASGE) committees and that they were more likely to be appointed when compared with male counterparts. Endorsement from a mentor was a strong predictor for committee assignment, and more women tended to have a letter of support than did men (33% vs 24%; P = .06),10 which underscores the importance of mentorship. Although this trend is promising, there remains a lack of female representation in leadership positions within the major gastroenterology societies within the United States, with very few female presidents over the past 30 years (1 for American Gastroenterological Association, 2 for American College of Gastroenterology, 3 for ASGE, and 3 for American Association for the Study of Liver Diseases.2

The gender gap may be smaller in the leadership of the fellowship programs because these roles are seen as more nurturing and more befitting the traditional female gender role. Prior studies have shown that women are more likely to choose education-driven career tracks than do their male counterparts, such as that of a clinician-educator.9,11 It could be postulated that the same applies for program director, because the role focuses more on education than research. This may contribute to women choosing nontraditional academic roles such as

clinician-educator, clinical instructor, and program director because they do not rely as heavily on publications for promotion. The clinician-educator track, however, may not have the same opportunity to advance into a major departmental leadership role as the traditional research-based track.7,11-13 This could account for the larger gender disparity seen in higher department level leadership roles.

It has been hypothesized that women have more home and child care responsibilities outside of work than do men and, as a result, are either not able to or choose not to devote as much time to career advancement. Hofler et al7 showed that there was more gender parity in subspecialties with a more controllable lifestyle such as radiology and anesthesiology. The authors hypothesize that the more predictable work hours as well as the higher-than-average compensation allow women to achieve a better work-life balance as well as potentially hire outside support in their personal life, allowing more time to dedicate to career advancement. Other studies refute this hypothesis, such as the survey study by Burke et al,5 which found that women tended to have children later and fewer children than did men at a similar career stage.5,6 Women also reported altering family planning more so than men, an indication that women are delaying personal life advancement in favor of their careers.5,6

There are several limitations to this study. All of the information collected was from publicly accessible Web sites, including program Web sites and other standard health Web sites. The information available on these Web sites may not have been complete, accurate, or up to date. We did our best to verify any information we found across Web sites of the program itself, the Association of American Medical Colleges Web site as well as the American College of Gastroenterology Web sites. We were not able to ascertain age, career stage, or the length of time each person has been in their current role. It is possible that the gender disparity and trend of lower academic rank that we found is due to the shorter career duration of women in medicine overall. In fact, a recent study by Diamond et al9 showed women to have lower research productivity; however, this difference disappeared when career duration was taken into account. We were unable to separate the community programs from academic programs because the vast majority of the programs listed a university affiliation on their program Web sites, and without deeper analysis, it was difficult to tell how much academic scholarship occurs at each program. A future study may consider looking at true community practices and female leadership in the private practice setting.

Conclusions

Gender disparities exist in the field of gastroenterology, although the gap is smaller in the roles of gastroenterology fellowship program leadership than in major departmental and divisional leadership roles. This difference may be related to the perception that the role of fellowship program director would be more befitting a traditional female gender role. Gender parity in fellowship program leadership was improved if the division chief was female; this suggested that improving female mentorship and sponsorship may decrease the gender gap for future generations of female gastroenterologists. Closer review of the data showed that

the female division chiefs of these programs also held the role of program director. It is unclear what factors propelled these women into the most senior leadership roles. Some gastroenterology societies have recognized the importance of mentorship and have started programs to help promote and empower women. For example, ASGE has the Leadership Education and Development program, and the American Gastroenterological Association has a Women’s Leadership Conference. Further studies are needed to investigate trends over time with regard to institutional support, promotion, and academic productivity as well as personal motivations, to help elucidate and eliminate the underlying causes of the gender gap.