The Illusion of Choice: Gender Segregation and the Challenge of Recruiting Women to Radiology

Darel E. Heitkamp, Carrie D. Norris, Stacy M. Rissing

In recent decades, the feminization of medicine has promised equal educational and professional opportunities for women pursuing medical careers [1,2,3]. Yet despite encouraging statistics that now show near even numbers of women (48%) and men (52%) enrolled in US medical schools [4,5], vast inequalities remain. Radiology is just one example of the persistent gender gap that plagues many medical specialties, with women representing fewer than 30% of total practicing radiologists and trainees in the United States [6,7,8]. Radiology educators have long debated the most effective means by which to improve the recruitment of women to our field, but they have managed to identify only potential contributing factors [9,10].

OBSTACLES TO RECRUITING WOMEN IN RADIOLOGY

One barrier to recruitment commonly cited in the literature is the widespread presence of misconceptions regarding radiology as a career [7]. Common misconceptions include: too little impact on patient care, a dark and isolated working environment located far from patient care areas, and too competitive a match process to get a residency position [5,7,11]. Unfortunately, because radiology is absent from the core curricula of most medical schools in the United States, these false stereotypes remain unchecked in the minds of most students when they make their specialty decisions [7,9,10].

In addition to the long-held misconceptions about radiology, the poor exposure that medical students get to the field is itself a serious obstacle to the recruitment of women [5,10]. Radiology must compete for student interest against specialties that have the luxury of one or more required rotations within the medical school curriculum. Because radiology is not a required core clerkship at most medical schools, the specialty cannot demonstrate to students just how patient-centered and interactive it really is. Students aren't afforded the opportunity to see the value that radiologists bring to patient care or to even imagine themselves in a radiology career. Instead, the misconceptions go unabated and eventually help to exclude radiology as a potential career choice in the minds of most students.

A third obstacle to recruiting women to radiology is the persistent shortage of women to serve as visual role models for students [9,10,12,13,14]. The importance of female role models in shaping the career decisions of women has been established in many medical fields including radiology, surgery, and internal medicine [15,16,17]. The educational theorist Etienne Wenger claims that medical students decide on specialties by drawing upon their medical school experiences to visualize themselves working within a particular field, an exercise he calls "paradigmatic trajectories" or career trajectories [13,18,19,20]. To do this, students need to physically see role models with which they can identify to know that specific careers possible for them [13,20]. The shortage of women in radiology may simply make it too difficult for female medical students to see themselves in the profession.

This is the author's manuscript of the article published in final edited form as:
Heitkamp, D. E., Norris, C. D., & Rissing, S. M. (2017). The illusion of choice: gender segregation and the challenge of recruiting women to radiology. Journal of the American College of Radiology, 14(7), 991-994. http://dx.doi.org/10.1016/j.jacr.2017.01.021

GENDER SEGREGATION IN MEDICAL SPECIALTIES

Within the last two decades, the contemporary social sciences have demonstrated the strong connections that exist between culture and behavior demographics in medical education [20]. Studies have long recognized the substantial degree of gender segregation among many medical specialties, a term which reflects the predominance of women in some specialties such as obstetrics-gynecology and family medicine and men in others such as radiology and orthopedic surgery [3,8,21]. The term implies that preferences for some medical specialties are at least partially influenced by the complex customs and social pressures that function to establish gender roles in society [20].

For example, certain specialties such as pediatrics and family medicine tend to be rooted in traits defined by our culture as distinctly feminine, namely nurturing and interpersonal communication. Surgical subspecialties, on the other hand, are more entrenched in the traditionally male traits of strength, stamina, and competition [20,22]. These strong cultural influences, unnoticed by most, help to explain why newly-matriculated medical students demonstrate predictable gender segregation along these specialty preferences even before their first day of classes [3,21,23].

A recent literature review of specialty preferences among medical students worldwide showed virtually identical trends in gender segregation by specialty. Regardless of nationality, male students were more likely to be interested in surgical careers, while female students were more likely to be interested in pediatrics, obstetrics-gynecology, and general practice [3,5,21,23,24,25]. While progress toward gender parity has been made in some specialties, such as more women entering general surgery in the United States, substantial imbalances remain in many others, including radiology.

Medicine is certainly not alone. Occupational gender segregation has been described in hundreds of jobs the world over, common in even the most egalitarian of countries [11]. Understanding and improving gender segregation in medical specialties, however, is of special importance, as diversity in medicine is believed to be a crucial prerequisite to ensuring equal access to health care [6,21]. Perhaps just as important, occupational gender segregation has been shown to be a major contributing factor to the gender wage gap that still pays women only seventy-eight cents for every dollar that men earn [1,9,11,13]. Indeed, the unfortunate truth is that, even today, women are conspicuously overrepresented in a small number of medical specialties that either earn lower salaries (family medicine) or are gender-typed to care for women and children (obstetrics-gynecology and pediatrics) [8,9,11].

THE ILLUSION OF CHOICE

Is it possible that medical students are merely acting upon established cultural narratives when they "choose" a medical specialty within which to train? Has the deck already been stacked in such a way as to bias students toward specialties that obey predefined social constructs regarding gender and occupation [20]? Perhaps true career “selection” occurs decades before medical school when complex social cues first begin informing children of potentially acceptable career roles [12].

This premise may explain why gender segregation is easy to find along the entire occupational skill spectrum. The same social constructs that promote gender segregation within lower-skilled occupations, encouraging women to enter careers like housekeeping and child care, are also at work in higher-skilled medical occupations such as pediatrics and family medicine [22]. What is regretfully apparent at both ends of the spectrum is the conspicuous segregation of women into lower wage-earning careers relative to their male counterparts [11].

Where does radiology fit into this matrix of gendered careers? Studies have shown that the hospital-based specialties like radiology tend to be preferred by men [14,21]. With roots in physics and computer technology, radiology may in fact represent the "STEM" specialty of medicine, appealing to predominantly male medical students in the same way that careers in engineering and computer science appeal to predominantly male college students [5,22,26].

Ironically, it may be that the ever-present misconceptions about radiology – isolation, lack of patient care, dark environment, heavy reliance on physics – are the true drivers of gender segregation in radiology. Because most medical students are informed about radiology not by meaningful personal experiences but by stereotyped descriptions learned from others, it is likely that the misconceptions are what most students use to determine if radiology is an acceptable occupation for them. If only radiology were one of the required third year clerkships in medical school, then perhaps these misconceptions would be largely dispelled and female medical students would have the opportunity to understand how personally and professionally satisfying such a career could be.

CLOSING THE GENDER GAP

Unfortunately, the solution to bridging the gender gap in radiology may not be easy. It is unclear whether a coordinated effort to provide early radiology exposure and mentorship to female medical students would substantially improve gender parity within our field. By the time young adult women have reached medical school, it may already be far too late to change their culturally-mediated opinions about what careers are suitable for them. A lasting reversal of gender segregation in medicine may in fact require difficult and fundamental changes to the way we perceive gender in our culture.

We would likely need to modify many of the customs and traditions that have evolved over hundreds of years to help us understand social constructs for acceptable gender roles. For example, we would likely need to change the pervasive cultural practice of providing girls with objects and experiences that promote their roles as caregivers and nurturers in society, and boys with objects and experiences that reinforce their roles as explorers and competitors. If occupational parity is truly our goal, then perhaps we should stop conditioning children early in life to segregate along traditional predefined gender roles.

Until then, it may pay to think of radiology as a gendered medical specialty. We should remember that many female medical students are likely using decades-old misconceptions about the field to inform them whether radiology is acceptable as a career. We must recognize the complex cultural forces behind the gendering of radiology, realize our limitations to easily

change them, and then work to define domains of change that are in fact within our control to improve recruitment of women.

Improving the gender gap may depend on our success in minimizing the obstacles to recruiting women: dispelling the misconceptions of radiology, improving its visibility in the medical school curriculum, and providing impactful mentorship to female students [7]. Radiology educators, perhaps somewhat complacent in their recruiting efforts from decades of brisk competition for radiology training positions, need to make concerted efforts to market the specialty to female students.

This strategy may require collaboration among stakeholders such as the Association of Program Directors in Radiology, the American Association for Women Radiologists, and the American College of Radiology. These strong advocacy organizations could align efforts aimed at: (1) establishing effective local and national programs that can cut through misconceptions and educate junior medical students about radiology, (2) integrating radiology education in the preclinical years of medical training, (3) establishing radiology as a required third year clinical clerkship, and (4) creating effective outreach and mentoring programs for female medical students [3,9,27]. Such a proactive multifaceted approach likely stands the best chance of producing locally measurable improvements to the recruitment of women to radiology.

REFERENCES

1. Ross S. The feminization of medicine. Virtual Mentor 2003;5.
2. Boulis AK, Jacobs JA. The changing face of medicine: women doctors and the evolution of health care in America. Ithaca (NY): ILR Press; 2008.
3. Alers M, van Leerdam L, Dielissen P, Lagro-Janssen A. Gendered specialties during medical education: a literature review. Perspect Med Educ 2014;3:163-78.
4. Association of American Medical Colleges. Total Enrollment by U.S. Medical School and Sex, 2012-2013 through 2016-2017. Available at: https://www.aamc.org/download/321526/data/factstableb1-2.pdf. Accessed January 14, 2017.
5. Zener R, Lee SY, Visscher KL, Ricketts M, Speer S, Wiseman D. Women in radiology: exploring the gender disparity. J Am Coll Radiol 2016;13:344-50.
6. Chapman CH, Hwang WT, Both S, Thomas CR, Deville C. Current status of diversity by race, Hispanic ethnicity, and sex in diagnostic radiology. Radiology 2014;270:232-40.
7. Fielding JR, Major NM, Mullan BF, et al. Choosing a specialty in medicine: female medical students and radiology. AJR Am J Roentgenol 2007;188:897-900.
8. Deitch CH, Sunshine JH, Chan WC, Shaffer KA. Women in the radiology profession: data from a 1995 national survey. AJR Am J Roentgenol 1998;170:263-70.
9. Potterton VK, Ruan S, Sunshine JH, Applegate K, Cypel Y, Forman HP. Why don't female medical students choose diagnostic radiology? A review of the current literature. J Am Coll Radiol 2004;1:583-90.

10. Lightfoote JB, Deville C, Ma LD, Winkfield KM, Macura KJ. Diversity, inclusion, and representation: it is time to act. J Am Coll Radiol 2016;13:1421-25.
11. Hegewisch A, Hartmann H. Occupational segregation and the gender wage gap: a job half done. Institute for Women's Policy Research, 2014.
12. Riska E. Gender and medical careers. Maturitas 2011;68:264-7.
13. Hill E, Vaughan S. The only girl in the room: how paradigmatic trajectories deter female students from surgical careers. Med Educ 2013;47:547-56.
14. Lambert EM, Holmboe ES. The relationship between specialty choice and gender of US medical students, 1990-2003. Acad Med 2005;80:797-802.
15. Roubidoux MA, Packer MM, Applegate KE, Aben G. Female medical students' interest in radiology careers. J Am Coll Radiol 2009;6:246-53.
16. Neumayer L, Kaiser S, Anderson K, et al. Perceptions of women medical students and their influence on career choice. Am J Surg 2002;183:146-50.
17. McMurray JE, Schwartz MD, Genero NP, Linzer M. The attractiveness of internal medicine: a qualitative analysis of the experiences of female and male medical students. Ann Intern Med 1993;119:812-8.
18. Wenger E. How we learn. Communities of practice. The social fabric of a learning organization. Healthc Forum J 1996;39:20-6.
19. Maudsley RF. Role models and the learning environment: essential elements in effective medical education. Acad Med 2001,76:432-4.
20. Hill EJ, Giles JA. Career decisions and gender: the illusion of choice? Perspect Med Educ 2014;3:151-4.
21. Boulis A, Jacobs J, Veloski JJ. Gender segregation by specialty during medical school. Acad Med 2001;76(10 Suppl):S65–7.
22. Charles M, Bradley K. Indulging our gendered selves? Sex segregation by field of study in 44 countries. AJS 2009;114:924-76.
23. Fysh TH, Thomas G, and Ellis H. Who wants to be a surgeon? A study of 300 first year medical students. BMC Med Educ 2007;7:2.
24. Buddeberg-Fischer B, Klaghofer R, Abel T, Buddeberg C. Swiss residents' specialty choices – impact of gender, personality traits, career motivation and life goals. BMC Health Serv Res 2006;6:137.
25. Fukuda W, Harada T. Gender differences in specialty preference and mismatch with real needs in Japanese medical students. BMC Med Educ 2010;10:15.
26. Mann A, Diprete TA. Trends in gender segregation in the choice of science and engineering majors. Soc Sci Res 2013;42:1519-41.
27. Ladd LM, Bonaminio DN, Gonda AS, et al. A mentorship and networking group for women in radiology. J Am Coll Radiol 2017; In Press.