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Authors
Glastonbury, Christine M
Wall, Susan D
Arenson, Ronald L

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Gender Issues Persist in Academic Radiology Promotions[1]

Christine M. Glastonbury, MBBS
Susan D. Wall, MD
Ronald L. Arenson, MD

In the conclusion of their article in this issue of *Radiology*, Kapoor et al (1) purport to offer good news for those concerned with a perceived gender disparity in academic promotions. The authors determined that academic radiologists in 2014 (and who had graduated in 1990 or 2000) were equally likely to be full professors, whether they were men or women. This is in distinction to other medical specialties but does not hold for the academic radiologists who graduated in 1980 (2). In their article, Kapoor et al found that, for radiologists with the same academic achievements, there was no difference in gender for those being promoted. This implies that there is generally an absence of gender bias in academic promotions in radiology; that "all things being equal," women are just as likely to be promoted to full professor as men. We are concerned with that conclusion. All things are not equal. This initial "equal rate of promotion" to full or associate professor only applies after adjustments are made for the very factors that are considered for promotion. The unadjusted comparison of rates of promotion shows that women are significantly less likely to be full or associate professors than their male colleagues. In other words, in academics women are not as readily able to achieve as are men. Kapoor et al also do not take into account the number or the gender of radiologists who may have dropped out of academia. Although the article purports to offer good news, we will explain in this editorial that it should be read as a call to action to develop and put into place policies that truly reduce gender inequality.

Since 1970 the total number of female radiologists has increased more than sevenfold, so that proportionally, approximately 20% of all radiologists and a little less than 30% of all academic radiologists in the United States are women (1,3,4). Although the number of women authors of published studies has increased significantly from 1993 to 2013 in some of our major radiology journals, including this one, we still report gender imbalance in those holding senior editorial positions (4,5) and in those holding academic leadership positions (5,6). It is important to recognize these factors as we try to understand the strikingly unchanging gender imbalance in medical students who are choosing radiology residency and who will also determine the future of our specialty (5,6).

When the authors determined an "adjusted rate" of promotion, they selected a number of variables or academic benchmarks that are considered reflective of academic productivity. Such variables include the total number of publications, the number of first or senior author publications, the number of awarded National Institutes of Health grants as principal investigator, and individuals' annual Medicare billing revenue. The authors found that for equal academic achievement there was no gender bias in who was promoted. Evaluation of the unadjusted comparison of rates of promotion, however, shows that women are significantly less likely to be full professors (16.5% vs 26.1% for women and men, respectively) and to be associate professors (18.3% vs 21%, respectively) than men. The unadjusted rates indicate that women are less likely or less able to achieve the academic standard that is required for promotion. It is this unadjusted comparison that is more likely to be the perceived comparison to those already in academia, to those in residency evaluating potential academic and nonacademic career paths, and to medical students viewing specialty choices. If women are to be seen by others and to feel that they are or might be promoted at the same rate as men

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[1] From the Department of Radiology, University of California, San Francisco, 505 Parnassus Ave, Room L358, Box 0628, San Francisco, CA 94143. Received October 31, 2016; revision requested November 7; revision received December 13; accepted December 20; final version accepted December 20. **Address correspondence to** C.M.G. (e-mail: *christine.glastonbury@ucsf.edu*).

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See also the article by Kapoor et al in this issue.

(that is, in unadjusted rates), then we must ask why women are not achieving the same academic productivity benchmarks as men and determine how we as a specialty are going to address such questions. For the ultimate benefit of our specialty, we should be seeking to help talented junior and midlevel faculty members to be academically productive and to thrive in their careers regardless of gender.

One of the theories proposed by Kapoor et al for the absolute (unadjusted) differences between men and women is that women lack equal opportunities to reach the same level of research productivity. Opportunities come at many stages in an academic radiologist's career. Early in one's career there are opportunities to be involved in others' projects, opportunities to present articles, to propose and lead studies, to be on committees. It is recognized that start-up packages for male physician scientists are substantially higher than those for female physician scientists (7). This might be explained by the different initial projects selected by men that require more expensive equipment and funding, or it might reflect poor negotiation on the part of female junior faculty. Or it may represent implicit gender bias of department chairs in their part of the negotiation. Although department chairs may not want to consider their potential for bias in the new faculty hiring or negotiation process, bias is most often unconscious and unintended (8). Overcoming it requires at least an initial awareness. Similar bias may exist for selection of junior faculty to lead projects or to chair committees.

Further into a faculty member's academic career, promotion to associate and then full professor requires external validators (referees) of academic standing and the recognition of the faculty's development of national and then international status. In a recent article in the *New York Times* (9), the author reported on the website, *www.biaswatchneuro.com*, which publishes lists of neuroscience conferences to highlight the disproportionate number of men invited to lecture at these meetings, even when the proportion of women scientists in that field is taken into account. Fewer invitations to lecture results in a more limited national and international visibility for academics and may also translate to fewer collaborating and mentoring opportunities. This bias might well be unconscious and unintended, but it serves to limit the opportunities for young women to be included in the academic community. It also perpetuates the stereotype that the successful people in science, technology, engineering and mathematics, or STEM, fields are men. Having successful leaders and speakers who are diverse in gender and ethnicity allows junior scientists and faculty members to imagine that they too can be successful and to reach for the success. It creates an environment of inclusion.

Perhaps the most critical element in any successful academic career is time. Good research takes time. Developing good research and writing habits and finding collaborators takes time. Thinking takes time. Current statistics for physician researchers and for all working women in the United States demonstrate that women bear a disproportionate amount of child-rearing and household responsibilities (10,11). Although it is often quoted, partially in jest, that working women go home to their "second job," these statistics bear truth to the reality of trying to achieve the same academic benchmarks as men with more limited personal time. When child-rearing is cited as a reason for women not being able to work full time there are three potential solutions: *(a)* We can make work hours more flexible so that women (and men) are able to accommodate schedules, *(b)* we can change the culture of childcare responsibilities to be equal so that more men share this duty, or *(c)* we can do both. Preference of one gender over the other is offered by the authors of this article as the reason that women decide to work part time but may reflect the reality of women bearing the burden of responsibility for child care.

Other valuable tools we can implement to help young academics to thrive are teaching strategies for good time-management habits, sharing ideas of managing dual-career households, and providing accessible child care at our universities. The authors mentioned that in the most recent cohort, men and women were achieving success in promotion at nearly the same rate, in comparison to the earlier cohorts. This finding could well be explained by considering the early achievers as the academic superstars, who are driven academically, often at the expense of other interests. An analysis of these individuals, both men and women, might reveal that they are single or, if married with children, have the luxury of extensive child-rearing help or stay-at-home spouses who take on much of the home responsibilities.

When evaluating academic radiologists in 2014, the authors determined rates of promotion for men and women by looking at those who graduated in 1980, 1990, and 2000. This method of rate determination does not take into account those radiologists who might have graduated in the earlier years but left academic careers by 2014. Although attrition from academic departments was not evaluated in this study, it would perhaps be valuable to understand the number and gender of radiologists who choose to leave academia.

Another way that departments can help to provide focused career guidance and support is to have dedicated radiology mentoring programs by matching junior women faculty members with more senior accomplished women faculty members. This is clearly difficult for departments with few female full professors, although a potential solution is to recruit senior women mentors from another department. The development of women in radiology career guidance social gatherings such as those held by our University of California, San Francisco, Radiology Department, at the University of Washington, and as extolled by others (personal communication with Yoshimi Anzai, MD, MPH, and Norman Beauchamp, MD, MHS) as a valuable radiology recruitment tool, can also allow women to share their experiences and learn from peers and more senior faculty members about a sustainable academic career

path (12). Men should recognize that they can learn to be important mentors and supporters of women faculty members too and should include women in their networks (13). Mentors of both sexes can encourage junior women faculty members to take worthwhile career risks and suggest them as candidates for professional opportunities.

At the department and at the national society level, women applicants should be pursued for open positions and should be recruited as seminar presenters and chairs of meeting sessions and committees. It is important that all faculty members, but especially those in leadership positions, learn about unconscious bias and microaggression and champion policies that support women. Women should be treated as peers and as professional colleagues.

In summary, we appreciate the authors' focus on the issue of gender differences in academic radiology. However, we do not agree with their emphasis on the adjusted rate of promotion to associate and full professor. We believe it is both more correct and more helpful to the readers of *Radiology* to focus on the unadjusted rate; because there is, in fact, a problem. Once those factors that are used as benchmarks for promotion (publications, grants, and clinical volume) are included in the rate determination, we see a significant gender disparity in promotions. To move forward and make these very disparate rates the same, we need to make important changes in our academic departments and societies. First, it is important to acknowledge that although inherent gender bias may not be present in radiology promotions, major differences still exist in promotion based on gender. The limitations for women to achieve the benchmarks we describe are inhibiting the advancement of women faculty. Awareness of gender differences is important when hiring faculty and determining start-up packages, selecting committee chairs, choosing project leads, and inviting speakers. There are many changes that can be made to work toward a more inclusive and flexible environment where both men and women are able to better manage work and personal and family life. Personal and professional life balance should be important for us all.

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