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COVID-19: The Long Tail

Reports that say that something hasn't happened are always interesting to me, because as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know.

—Donald J. Rumsfeld [1]

Donald Rumsfeld did not get enough credit for acknowledging that we make decisions under conditions of incomplete evidence and, occasionally, profound uncertainty. Science and the recommendations resulting from the evidence work the same way. Once published, it is not immutable. Recommendations change when new evidence augments, supplements, or replaces the old. Otherwise, we would be bloodletting for the common cold.

Similarly, with coronavirus disease 2019 (COVID-19), we predict future outcomes using what we have available. These outcomes range from current and future practice volume [2-4], to job and insurance loss and the effects on cancer screening [5], to research productivity and gender [6]. The effects on practice volume and income are immediate outcomes. Others, such as loss of academic productivity among women and the consequences on career advancement and leadership opportunities, will manifest much later, unless we pay attention now and provide appropriate support at the institutional level.

Using a 5-year period and data from Scopus, Gupta et al demonstrated significant disparity in authorship of imaging publications by women compared with men at all career stages [7]. The productivity gap widens as authors advance in their

careers (Fig. 1). This pattern among 71,754 contributing authors is static over the 5-year period. COVID-19 brought uncomfortable attention to one potential reason: persistent gendered expectations of household work. *JACR* evaluated the immediate effects of this disparity on our authors (Fig. 2). In the first 3 months of 2020, women authors as a proportion of all authors grew compared with 2019, with a subsequent precipitous drop during the initial phase of the pandemic. Most concerning is the impact of COVID-19 on original research authored by women, a critical benchmark of academic promotion and success and a marker of future leadership. We have worked to institutionalize culture change, bias training, and processes to support women. As the pandemic surges and resurges, a known unknown is the pattern of productivity loss among women and the downstream effect on

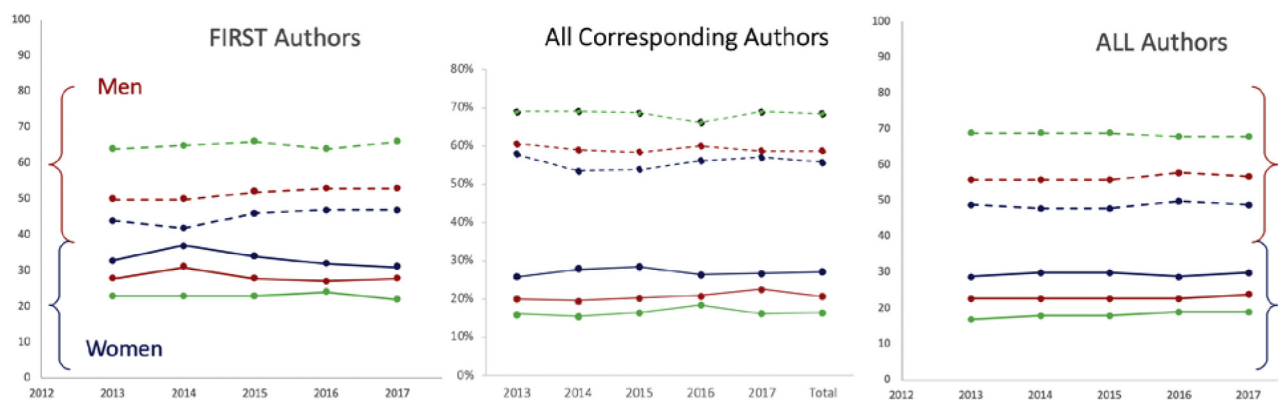
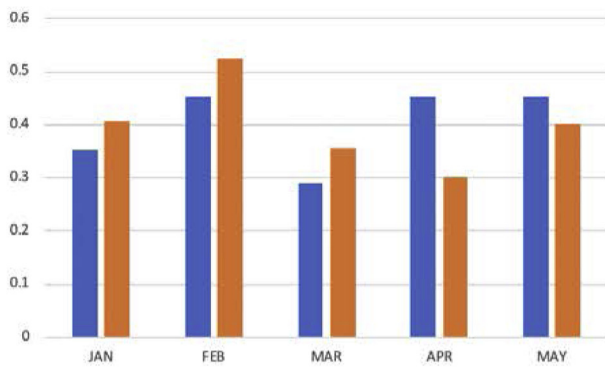


Fig 1. Authorship by gender in radiology journals identified in Scopus between 2013 and 2017. Solid lines represent proportions of women authors compared with men (dashed lines). Early career authors represented in blue, midcareer in red, advanced career in green. In collaboration with Elsevier.

A. All submissions



B. Original articles

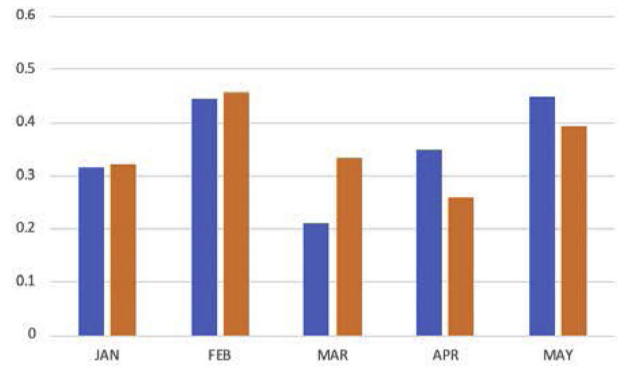


Fig 2. *JACR* author submissions by women. The orange bars represent the proportion of women authors in 2020 over the coronavirus disease 2019 acute phase and the same period in 2019 (blue bars) for comparison. (A) All submissions. (B) Original articles.

gender distribution of leadership over the next decades. The effect on women of color will amplify existing barriers as gender intersects with race and ethnicity, unless addressed. Whatever the magnitude of loss (the known unknown), the gains made in improving the representation of women in all spheres of academic and private practice will be reversed.

The goal is not a quota by gender. As a specialty, we must decrease systemic barriers to help everyone achieve their personal and professional goals. Cultural expectations as highlighted by COVID-19 is one such barrier. Scholarly publications are a lagging indicator of pipeline and productivity barriers. Nevertheless, *JACR* will continue to provide opportunities for women to

participate in scholarly activities. We will continue to highlight equity, diversity, and inclusion. As a specialty, I charge all of you to develop innovative solutions to support each other in the new normal.

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