Science Literacy in the Age of (Dis)Information: A Public Health Concern

To the Editor: I have spent my adult life preparing for, and entering, an MD–PhD program because I believe that my work as a physician–scientist could have a larger, lasting impact on public health than my work providing individual patient care. The COVID-19 pandemic has exposed a new threat to public health, though, inspiring deep introspection about my future career.

The rising cohort of physicians and biomedical scientists are not strangers to an “unprecedented” crisis. My generation has experienced a spectrum of calamity, ranging from global terrorism and financial crises to natural disasters and biological threats. Despite the physical and emotional harm caused by these crises, our urgent concern about the future is not the next pandemic or the next major hurricane, but rather the deterioration of public trust and support of science. What good is a career developing and testing novel therapeutics or vaccines if many Americans refuse verified treatments due to fear, misinformation, or a lack of confidence in the scientific establishment? This type of fear-mongering is dangerous, not only because it hampers scientific endeavors, but because it is often fueled by narratives and information that are not subject to fact-checking and peer review. This is an urgent matter of public health concern.

We are living in the age of mass (dis)information. Anyone with Internet access and search savvy can access information from the textbooks and basic science articles that the experts use. Without the years of study and vocational training to interpret and apply this information responsibly, this information can be misleading or harmful. Everyone, especially patients, should be encouraged to advance their understanding of the illnesses that affect them or their loved ones. The problem is when anonymous social media content creators—perhaps with political, financial, or other motivations—are granted credibility and provided the same platform as individuals who have spent their entire careers becoming experts to advance public health.

How do we adapt to this ever-changing landscape of fact and fiction? I believe the strongest solution to be through empowering individuals with science literacy and critical thinking.

To re-instill public trust in biomedical science, we, as experts and public health educators, have the responsibility to engage with the general public in an accessible way; we should not hide behind the veil of a convoluted technical lexicon or intimidating, process-laden work. Unfortunately, not all physicians and scientists can be a Carl Sagan or a Neil deGrasse Tyson; we do not all possess their gift for (seemingly) effortlessly weaving science, education, and entertainment together to teach science literacy and critical thinking to people of all backgrounds. However, I believe that popular media such as TED Talks, podcasts, and docu-series have inspired a talented pool of communicators and content creators who could aid physicians and scientists in creating quickly consumable educational content specifically targeted for social media.

Perhaps it is time to increase investment in initiatives focused on promoting an enduring alliance of science communicators across the sciences and humanities. In this way, academic medical institutions could help recruit, develop, and retain professional science communicators to create educational content for social media that the public could turn to for apolitical, accurate information from established institutions. For it is becoming increasingly evident that the promotion of science literacy and critical thinking is a pressing public health concern.

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COVID-19 and Physician Mothers

To the Editor: The COVID-19 pandemic has heightened existing disparities, including the disproportionate burden of pandemic planning that falls on the shoulders of female residents and physicians with young children.

Residents working in higher-risk settings have to move away from their family homes and their children. Children and mothers may feel psychological stressors associated with physical separation for an indefinite period of time. These impacts on the psyche cannot be quantified. Also, at a time when most commercial childcare centers are closed, finding alternatives requires effort. Pandemic planning by academic institutions and hospitals should incorporate childcare options for employees and provide ample time for parents to find childcare options when scheduling shifts. It is important to note that female physicians spend 8.5 hours more per week caring for children, caring for elderly parents, and completing other domestic duties compared with male physicians.1

Although physicians who are pregnant may be exempt from COVID-related duties, those who are breastfeeding may not be and may worry about respiratory transmission due to close contact with their child. A small study from Wuhan, China, did not find SARS-CoV-2 shedding in breast milk, and pumping may be an option.2 Many hospital sites, however, do not have dedicated pumping areas for employees.

In addition, academic physicians face the maternal penalty of reduced research productivity.3 Academic journals have been seeing a substantial decrease in solo submissions from female scientists since the start of the COVID-19 pandemic, which has implications for career advancement.4 Further, professional videoconferences throughout the day are not possible while caring for young children at home.

Finally, the financial impact of a worsening economy on female physicians’ incomes and retirement security remains understated.5 Compensation is on average 27.7% lower for female physicians than for their male counterparts.6 A deteriorating economy will have long-term impacts on retirement plans, asset management, and family planning for women in medicine.

Physicians who are mothers to young children feel proud to contribute their skills in taking care of COVID patients. The medical profession should recognize physician mothers who rise to the challenge despite these odds.

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