Emerging evidence suggests that disruptions related to the COVID-19 pandemic have jeopardized the “engagement, experience, and retention” of women in academic medicine and the other disciplines that comprise the STEMM (science, technology, engineering, mathematics, and medicine) professions, says a new consensus study report from the National Academies of Sciences, Engineering, and Medicine (NASEM).

Also concerning, the report notes, is evidence from across the globe indicating that women on the front lines of health care in particular “were at greatest risk of adverse mental health effects during the COVID-19 pandemic.”

The 253-page report, *Impact of COVID-19 on the Careers of Women in Academic Sciences, Engineering, and Medicine*, includes survey responses from more than 900 women in STEMM occupations to questions about their experiences last year during the pandemic. It identifies a range of concerns, including challenges with work-life boundaries, a downturn in measures of productivity (such as publishing), and the effects of institutional decisions that have disproportionately negative effects on women.

In general, the pandemic has heightened challenges with work-life boundaries that largely affect women, especially those who are parents or caregivers. “Preliminary evidence from 2020 suggests women in academic STEMM are experiencing increased workload, decreased productivity, changes in interactions, and difficulties from remote work caused by the COVID-19 pandemic and associated disruptions,” the report notes.

The pandemic brought new or increased burdens, including lack of access to adequate childcare, increased demands on women's time to address the needs of family members (including remote schooling and eldercare), and other issues, such as physical and mental health concerns.

Some measures of productivity, including hours worked, authorship status, and attendance at conferences, suggest that women have been disproportionally affected by COVID-19 disruptions compared with their male counterparts, the report says. For example, 1 study cited by the NASEM report found that journal articles on COVID-19 published in a group of journals had 19% fewer women first authors compared with articles published in the same journals in 2019.

One chapter of the report provides evidence that various factors pose a heightened risk for mental health issues among academic women vs men in STEMM fields during the pandemic—especially those working in medicine.

“For women in the health professions, major risk factors during the COVID-19 pandemic in 2020 included unpredictability in clinical work, evolving clinical and leadership roles, the psychological demands of unremitting and stressful work, and heightened health risks to family and self,” the report says.

Noting that studies document that chronic and unpredictable stress, such as that imposed by the coronavirus pandemic, is “the most detrimental form of stress,” the report explains that gender differences in stress exposures and in physiologic response to stress “may interact to increase risk of mental health problems for women during the COVID-19 pandemic.”

The report cites evidence that during previous infectious disease outbreaks—such as severe acute respiratory syndrome (SARS) in 2003, Ebola in 2014, and Zika in 2016—factors such as social
isolation and caregiving responsibilities that are more common among women have been associated with greater mental health concerns.

And there are particular concerns related to women working in health care, who comprise about three-quarters of the frontline workforce and are thus at greater risk of contracting COVID-19. Women working in health care are more likely than their male counterparts to provide bedside care for patients with COVID-19 and to manage the distress of family members of sick and dying patients with COVID-19, the authors explain.

Researchers from a number of countries reported an increase in poor sleep quality and insomnia in the general population during the COVID-19 pandemic, especially among health care workers. The NASEM report notes that women are also more likely to have unpredictable shift-based work schedules that can have disruptive effects on circadian rhythms and sleep.

As a previous NASEM report on clinician burnout noted, burnout is an important indicator of mental well-being and job satisfaction. The new report cites studies showing that women in medicine, nursing, and basic science report higher levels of burnout compared with men in similar roles.

“It is my hope that this report will not only advance the discussion about how best to enhance the representation and vitality of academic women in STEMM, but create an awareness about the adverse impact that these unprecedented times will have on women going forward,” notes Eve Higginbotham, MD, SM, ML, chair of the committee that wrote the report and professor of ophthalmology and vice dean of inclusion, diversity, and equity at the University of Pennsylvania's Perelman School of Medicine.

“It is also my hope that the research questions posed by this committee will translate into enduring solutions that will strengthen institutional interventions to weather future disruptions,” she wrote.