Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Editorial

The Waiting is the Hardest Part: Social Isolation and Delayed Healthcare Delivery During the COVID-19 Pandemic

THE SARS-CoV-2 Coronavirus Disease 2019 (COVID-19) pandemic has impacted our healthcare system in myriad ways, many of which are brutally obvious to anyone with even a cursory knowledge of current events (overrun intensive care units, ventilator and personal protective equipment shortages, and nearly 500,000 deaths in the United States as of the writing of this editorial). There are, however, more subtle effects that the pandemic has wrought on both the health of Americans and the healthcare system that are no less insidious despite the lack of above-the-fold headlines. Prominent among these are the sequelae of prolonged social isolation, fear of COVID-19 infection, and postponed routine and semiurgent medical care (either due to efforts by medical professionals to conserve limited hospital beds and other resources or patients avoiding care in order to minimize their risk of infection). Although the true toll of the COVID-19 pandemic inevitably will remain unclear, we are beginning to learn a little more about how the pandemic has impacted the mental and physical health of even those who have not been infected by the virus.

There is ample evidence from prior natural disasters and major economic crises that elevated rates of depression, anxiety, suicidal ideation, substance abuse, and post-traumatic stress disorder follow such events. Although there are little reliable data on the mental health effects of previous global pandemics (understandable given the historic periods involved), one would imagine that the consequences of prolonged quarantine/social isolation and the rampant risk of illness and death from COVID-19 infection would be similar. A study by Lei et al. using survey data from China, the first location where severe lockdowns were instituted, demonstrated high levels of anxiety and depression among the respondents (8.3% and 14.6%, respectively), which rose to even greater levels when the respondent had someone in his/her social circle who was forced to quarantine due to COVID-19 infection or close contact (12.9% and 22.4%, respectively).[1] Another study from India found that 80% of adults surveyed were preoccupied with thoughts of COVID-19, and sleep difficulties, paranoia, and distress were reported by 12.5%, 37.8%, and 36.4% of respondents. More than 80% of study participants perceived a need for additional mental health services.[2] Although the psychological effects of the pandemic can affect anybody, it has been conjectured that quarantine and isolation would hit older individuals hardest, especially those who live alone and have small or nonexistent social networks. Based on recent data, such individuals make up around 13.4% of the European population, giving scale to the extent of this potential crisis.[3] Older patients with depression and/or anxiety also are more likely to have increased malnutrition, healthcare utilization, and even mortality, which can strain an already overloaded healthcare system struggling with the COVID-19 pandemic.[4]

Another important factor to consider when assessing the impact of the COVID-19 pandemic is the ramifications of healthcare avoidance by individuals who wish to limit their potential exposure to the virus by restricting contact with physicians and hospitals. It is clear that such avoidance has occurred over the past year on a mass scale, and the impact of this on health outcomes and overall mortality remains debatable. A recent paper in the *Journal of the National Medical Association* reported that 43% of patients have missed routine preventative care appointments due to the pandemic, and more than a third of adults have not received recommended screening procedures.[5] There also data are that, in addition to skipping routine care, some individuals may be avoiding the hospital for serious or potentially life-threatening medical conditions. Heart failure admissions have declined 20%-to-50% across several European countries during the pandemic. Although some of this decrement may reflect a reduction in heart failure exacerbations as patients eat out less, work from home, and reduce strenuous activities, this does not account for the entire change. Indeed, when patients do eventually present with heart failure symptoms, they are sicker than before the pandemic, with a higher average New York Heart Association Class and more severe peripheral edema.[6] Another study looking at stroke admissions at a single hospital in Hong Kong during the pandemic found similar evidence of medical

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avoidance. The time from onset of stroke symptoms to presentation at the hospital increased from prepandemic levels by almost an hour, and the percentage of patients presenting within 4.5 hours of symptom onset dropped from 71.9% to 54.8%. Additionally, there was a significant reduction in the number of transient ischemic attack (TIA) patients compared with baseline levels, indicating that some of these patients likely stayed home and did not seek medical care for their TIAs. This can have potentially devastating consequences, as 10%-to 20% of TIA patients will go on to develop a stroke within 90 days without appropriate medical intervention.[7]

The healthcare system itself also has contributed to the disruption in routine medical care through the cancellation of outpatient visits and the postponement of elective and semielective surgical cases in order to conserve medical resources during the peak(s) of the pandemic. Many health systems cancelled almost all elective surgical cases for a period ranging from a few weeks to several months. Work by the COVIDSurg Collaborative put the approximate number of surgical cases cancelled during the 12-week peak of the pandemic last spring at more than 28 million cases globally. Although the vast majority of these cancelled cases would be for benign disease, the same group estimated that 37.7% of oncologic surgeries also were cancelled during this period.[8] Cardiac surgical services also were forced to curtail semielective procedures during the pandemic, with one study showing a 54% reduction in overall case volume, with some variability based on the type of cardiac surgery (50% reduction for coronary artery bypass grafts, 71% reduction for valve procedures).[9] This postponement of surgical cases, unfortunately, has a snowball effect on the ability to operate on future patients in a timely manner, as it would be impossible for surgical services to increase their case volume to a large-enough degree to rapidly play catch-up on all of the cancelled procedures. Indeed, the COVIDSurg Collaborative estimated that even with a consistent increase in surgical volume of 20% over baseline, it would take nearly a year to clear the backlog of cases created just by the 12 weeks of cancellations last spring.[8] The impact of surgical cancellations during COVID-19 also goes beyond potential disease progression and is yet another factor that may contribute to mental health issues during the pandemic. A recent paper by Wilson et al. examined the perceptions of orthopedic surgical patients who had hip or knee arthroplasties postponed due to COVID-19. Of those patients who participated in the survey, most were understanding of the delay, with only 24.3% stating that they felt they could not wait a month or more to have their surgery. Despite this, 67.6% reported emotional distress caused by the cancellation of their scheduled surgery, and 46.8% expressed that, given the choice, they would have surgery immediately despite the risks posed by COVID-19.[10]

In this issue of the *Journal of Cardiothoracic and Vascular Anesthesiology*, Feldheim et al. presented a case that makes clear the potential impact the COVID-19 pandemic can have on the health and well-being of noninfected individuals.[11] The manuscript discussed a 74-year-old man who came to the operating room for a right carotid endarterectomy in June 2020 after having his case postponed since March due to the pandemic. After a routine induction of general anesthesia, the patient became increasingly unstable during his airway management, which required several attempts at intubation before successfully being secured. A subsequent intraoperative transesophageal echocardiogram revealed a left ventricular ejection fraction of 15%- to-20% with apical ballooning, consistent with stress-induced (Takotsubo) cardiomyopathy. His surgery was postponed, and he was admitted to the intensive care unit for medical management. His condition improved rapidly, and he was discharged to home after 48 hours. A transthoracic echocardiogram performed four weeks later revealed fully recovered left ventricle function, and the patient underwent an uncomplicated right carotid endarterectomy six weeks after his initial presentation. The authors speculated that the stress surrounding life during the COVID-19 pandemic and the cancellation of his original surgery in March primed the patient for developing Takotsubo cardiomyopathy (TC) when confronted with the physical stress of a challenging, prolonged intubation. Although the role that pandemic-related stress played in this individual patient's development of TC can never truly be known, there are data that the rate of TC has increased during past traumatic events. Both the 2004 earthquake in Niigata Prefecture, Japan, and the 2011 earthquake in Christchurch, New Zealand were linked to dramatic increases in the rate of TC among the local population in the days and weeks after the events.[12] More germane to the case in question, the Cleveland Clinic published a cohort study examining the rate of TC in patients presenting with symptoms of acute coronary syndrome during the COVID-19 pandemic, and found an incidence of 7.8%, compared with 1.5%-to-1.8% before the start of the pandemic. Notably, none of the patients who developed TC was found to be COVID-19 positive, eliminating the possibility that the rise in TC in the general population is related to a physiologic response to COVID-19 infection itself.[13]

The COVID-19 pandemic has turned much of the world's daily life on its head and has created challenges and questions that could not have been anticipated at this time only two years ago. Just as the pandemic has impacted the work routine, social life, and family dynamics of people all over the world, it also has affected their health, in ways both transparent and not. Although our attention as healthcare workers rightly has focused on caring for those with COVID-19 infection, we cannot turn a blind eye to the more subtle health effects that the pandemic has had, and will continue to have, on our patients who remain uninfected by the virus. The article by Feldheim et al. in this issue goes a small way toward bringing these issues into the spotlight.

Conflict of Interest

None.

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