

Embracing technology, the pandemic's lesson for us

Since the beginning, the pandemic has changed many people's lives worldwide, and I was no exception. As a young female researcher from Iran who studies medicine in the U.S., I was torn apart by the suffering of loved ones in both countries. Well before the public was aware of COVID-19, my hometown had become an epicenter for the virus. Every day, more lives were lost, and worrying about my father's health became my daily nightmare. We had still not recovered from the loss of my mother several years before. At school in the U.S., the situation was not any better; everything was uncertain, classes became virtual, my favorite place--the library-- was closed, and I could not see friends in person. My summer project was canceled since unnecessary personnel were not allowed at the hospital.

But the fear of losing loved ones, loneliness, and uncertainty became unexpected gifts for me. Struggling with my own hopelessness and isolation, I found purpose in comforting others. As a co-director at HEAL, a student-run free clinic, I could still interact with patients. Many faced deep social problems such as unemployment, transient housing, food insecurity, and limited access to technology. Our patients were among the most vulnerable populations to COVID-19. To provide care for them, we started to offer virtual care in the form of video and audio calls. But there were many questions surrounding the impact of this transition. Would patients be able to use the new technology? Would they feel comfortable addressing their concerns in this format? To answer these questions and many more, I wrote a research proposal that received the Arnold P. Gold Foundation summer fellowship award.¹

The research results were very encouraging. My data showed that 85% of patients were satisfied with the virtual communication quality, the amount of time spent with the physician, and felt comfortable using technology. For many of our patients, HEAL visits were the only way to access a physician and the majority mentioned they would like to use telemedicine even after the pandemic. Perhaps telemedicine could be a solution to the low patient retention rate, our missed appointment rate had been greater than 20% in the past. The literature also supports numerous benefits of telemedicine, especially for minorities or those in rural areas, who otherwise might have to commute, find childcare, or take time off work to make an in-person visit.²⁻⁴ Yet if virtual care is so promising for expanding access, why had it not taken off prior to COVID?

As early as 1879, the first telehealth discussion was published in *The Lancet*, suggesting that telephone communication could decrease unnecessary visits. The earliest closed-circuit television-based telemedicine visits happened in the late 1950s.⁵ Since then, various articles have suggested the revolutionary role of telemedicine.^{6,7} Still it took over 60 years and a pandemic to fully implement telehealth in mainstream medicine—such that now, CDC data reports a 154% increase in telehealth use in late March 2020 compared to the previous year, and 93% of the visits were for diseases other than COVID-19.⁸ So why the delay?

There might be various contributors to our lack of interest in using technology for a medical visit, but the slow adoption of technology has a surprisingly long history in medicine. For example, it took 35 years for the medical community to finally improve and use stethoscopes in 1851.⁹ One of the first robotic applications in the industry occurred at Ford in the 1920s,¹⁰ yet the first use of robots for neurosurgical biopsies did not happen until over half a century later, in 1985.¹¹ Medicine is far behind other industries such as retail and banking in technology adoption, and a myriad of factors might be responsible.¹²

The first step to overcome technology hesitancy is to acknowledge the extent of the problem, as we might all see with the case of telehealth. Then, we, as the medical community, should see where each of us can actively facilitate technology integration into medicine. I have personally found this approach very fulfilling. Last July, a portable biosensor that I designed for tracking COVID-19 antibodies was among the top finalists out of over 250 innovators.¹³ The pandemic taught me to be bold in exploring new technologies, and I am excited to explore what others can be adopted by medicine to upgrade the quality of care. As a future physician, I will remember my much-needed lesson and constantly educate myself and my patients about novel technologies and their potential to improve our lives. I am thrilled about what technology can offer for the future of medicine and ready to embrace it with an open and curious mind.

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