



# Teleurology and digital health app in COVID-19 pandemic

“April was death. April was hope. April was cruel.”

This was the sad title of The WaPo's (Washington Post, a major American daily newspaper) cover article, published on May 2, 2020. In the month of April 2020, more than 2,000 Americans died each day, and more than one out of every 325 Americans had confirmed infections with the newly emergent human virus, severe acute respiratory syndrome–coronavirus 2 (SARS-CoV-2). In the elegantly written recent article [1], Dr. Khae Hawn Kim at Gachon University Gil Medical Center described the early responses to the coronavirus disease 2019 (COVID-19) global health crisis. The day he wrote the article was the same day that a 17-year-old South Korean adolescent died of aggravated acute respiratory distress syndrome without a solid test result regarding COVID-19. Although the result turned out to be negative, it was news fearful enough to alert the healthcare community.

To respond to this pandemic, the healthcare system has been directly and indirectly forced to rapidly adjust to this new pandemic environment and reset clinical infrastructure for appropriate healthcare delivery, particularly regarding the elderly. Instead of the Standard-of-Care in-person consultation, “telemedicine,” communication through telephone or video connection, is being utilized for outpatients not at high risk. Since recent scientific evidence suggests that virus transmission occurs through symptomatic, pre-symptomatic, and even asymptomatic patients, as well as environmental transmission, patients and healthcare providers require extensive usage of personal protective equipment as well as well-curated decontamination procedures of the facility and instruments during procedures of individual therapies and treatment.

This is particularly evident in urological clinical settings. High percentages of urological patients belong to aged populations, who are subsequently more vulnerable to severe COVID-19 infection. Boehm et al. [2] reported that approximately 85% of urological patients are asking for telemedi-

cal consultations to avoid various possible risk factors. Bold clinical protocols are urgently needed to provide contact-free teleurological care during and after the outbreak of the COVID-19 pandemic.

To improve our understanding on the potential impacts and specific epidemiology of COVID-19, the implementation of mobile technology for digital data collection tools, such as smartphone applications, should be considered to facilitate research activities in reducing spread of disease and in improving contact-free patient care. Scientists and developers alike should be particularly aware that privacy is of the utmost importance to successfully apply the app-based data collection during this pandemic [3]. Patients want to be able to confidently trust the usage of digital health data.

As shown in mHealthHUB (<http://mhealth-hub.org/mhealth-solutions-against-covid-19>), a COVID-19 Symptom Tracker mobile application lead by Dr. Chan at Harvard Medical School and investigators at the COronavirus Pandemic Epidemiology (COPE) consortium is one good example for epidemiologic data collection to determine COVID-19 risk factors, clinical outcomes, public health planning, and the associated mechanism and therapeutic options [2]. The clinical values of another app-based symptom tracker for symptom tracking and modeling were assessed by clinical research led by Dr. Spector at King's College London [4] to determine whether loss of olfactory and gustatory functions is caused by COVID-19 among 2,618,862 individuals. The HEALTHLYNKED COVID-19 Tracker [5] and Apple's official COVID-19 app were developed based on the collaboration with the World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC), respectively.

In *The Waste Land* (1922), T.S. Eliot (1888–1965) writes that “April is the cruelest month.” However, we know that his poem actually sings hope about the ending of Winter and the celebration of a new Spring. We do not yet know if we will experience another painful Spring next year, or if we will face a new normal all together coming out of this

pandemic. The preparation of teleurology training for urology healthcare providers in our medical schools starts as early as the upcoming semester. The post COVID-19 era may significantly rely on digital data collection from Smartphone applications and machine learning algorithms for clinical trials and research activities. Are we ready for this paradigm shift towards the telemedicine and digital health that lies just around the next corner?

## CONFLICTS OF INTEREST

The authors have nothing to disclose.

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