

Methods. A systematic review was carried out. The strategy was defined by the researchers using the terms “Covid-19” and “Self-testing” and their respective synonyms, including studies with data collection from 01/01/2021. Searches were carried out on October 20, 2021, in several databases.

Results. A total of 504 studies were identified, four of which were included in this review: two self-tests of nasopharyngeal collection antigen compared to reverse transcriptase polymerase chain reaction (RT-PCR); a supervised and self-collected anterior nasal smear self-test; and a study that evaluated the performance of six self-collected rapid antigen tests against quantitative RT-PCR (gargle, sputum, and spit). Saliva self-tests were found to have low sensitivity (<45%), while anterior nasal or nasopharyngeal swab self-tests had greater than 80 percent sensitivity. In all self-tests, the specificity was less than 85 percent. The diagnostic accuracy of self-tests for the different SARS-CoV-2 variants was not identified.

Conclusions. The use of self-tests as a screening strategy is recommended, being a strategy with a significant impact on the surveillance and control of SARS-CoV-2 transmission. Further studies are needed to assess: (i) accuracy considering the concern variants, (ii) safety of tests with self-collection of biological material, and (iii) disposal of biological waste.

PD41 Role Of Artificial Intelligence In Improving Access To COVID-19 Diagnosis During Pandemic

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Introduction. The evolution of advances in informatics, technology in medicine, and artificial intelligence (AI) offers opportunities to enhance health care during the coronavirus disease 2019 (COVID-19) pandemic. The challenge for biomedical engineers is to implement these developments in clinical practice to improve global health. Populations living in low-income countries do not have access to specialist care and quality diagnostic services for COVID-19. Therefore, an AI system based on a telemedicine platform for diagnosing COVID-19 could help mitigate the lack of highly trained radiologists at regional hospitals and serve as a triage system for rationalizing the use of reverse transcription polymerase chain reaction (RT-PCR) testing and other health resources in low-income countries. Thus, the utility of an AI system for diagnosing COVID-19 in Paraguay was investigated.

Methods. This is a descriptive multicenter observational feasibility study of an AI tool for the rapid detection of COVID-19 in chest computed tomography (CT) images of patients with respiratory difficulties who attended public hospitals across the country.

Results. Between March 2020 and August 2021, 3,514 rapid diagnostic tests were carried out on patients with respiratory disorders to rule out COVID-19 in 14 hospitals nationwide. The average age of the

patients was 48.6 years (52.8% were men); the most common age ranges were 27 to 59 years, followed by older than 60 years and 19 to 26 years. The most frequent findings on the CT images were severe pneumonia, bilateral pneumonia with pleural effusion, bilateral pulmonary emphysema, diffuse ground glass opacity, hemidiaphragmatic paretic, calcified granuloma in the lower right lobe, bilateral pleural effusion, sequelae of tuberculosis, bilateral emphysema, and fibrotic changes. Overall, there was 93 percent agreement and 7 percent discordance between the AI system and the RT-PCR test results. Compared with RT-PCR testing, the AI system had a sensitivity of 93 percent and a specificity of 80 percent.

Conclusions. Paraguay has an AI-based telemedicine screening system for the rapid detection of COVID-19 that uses chest CT images of patients with respiratory conditions.

PD42 Diagnosis Of Chronic Diseases During The COVID-19 Pandemic Through Telemedicine

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Introduction. The diagnosis and management of chronic diseases during the coronavirus disease 2019 (COVID-19) pandemic was one of the biggest challenges facing healthcare systems globally, especially in low-income countries. Since basic health care for chronic diseases can overwhelm the capacity of conventional face-to-face healthcare services, there is growing interest in using information and communication technology and telemedicine to improve access to medical services that are often not consistently available in rural communities. In this context, telemedicine tools should be directed toward maintaining basic health services for patients with chronic conditions in rural and underserved hospitals. This study evaluated a telemedicine system in remote public hospitals in Paraguay to demonstrate how telemedicine improved access to tertiary level diagnostic services for patients with chronic conditions.

Methods. This descriptive study evaluated the use of telemedicine for diagnosing patients in remote public hospitals to improve provision of basic health services to patients with chronic disease during the COVID-19 pandemic. The type and frequency of diagnostic studies performed were determined.

Results. During the study 677,023 telediagnoses were performed in 67 hospitals. The 435,568 electrocardiograms performed in 61 hospitals indicated normal physiology (60.1%), unspecified arrhythmias (10.5%), and sinus bradycardia (8.4%). The 227,360 teletomography tests performed in 12 hospitals were undertaken on the head (52.4%) because of trauma (motorcycle accidents) and cerebrovascular diseases, chest (15.8 %), and other anatomical regions. The 14,076 electroencephalograms performed in 19 hospitals were undertaken for antecedents of seizure (53.3%), disease progression controls (14.0%), and headache (12.5%). Nineteen prenatal ultrasound scans were conducted.