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Teleradiology in COVID-19: A Sustainable Innovative Solution

From:

Hafiza Qurat Ul Ain, MBBS, Muhammad Junaid Tahir, MBBS, Summaiya Waheed, MBBS, Shoaib Ahmad, MBBS, Irfan Ullah, MBBS, Zohaib Yousaf, MBBS, MSc

From the CMH Multan Institute of Medical Sciences, Multan, Pakistan (H.Q.U.A.); Lahore General Hospital, Lahore 54000, Pakistan (M.J.T.); Dr Ruth K.M. Pfau, Civil Hospital, Karachi, Pakistan (S.W.); Dow University of Health Sciences, Karachi, Pakistan (S.W.); Punjab Medical College, Faisalabad, Pakistan (S.A.); Kabir Medical College, Gandhara University, Peshawar, Pakistan (I.U.); Hamad Medical Corporation, Doha, Qatar (Z.Y.).

To the editor,

The coronavirus disease 2019 (COVID-19) was declared a global pandemic by the World Health Organization (WHO) on March 11, 2020. As of June 7, 2021, 173.37M cases of COVID-19 have been confirmed, with 3.73M deaths worldwide (<https://coronavirus.jhu.edu/>). Health care professionals have responded rapidly to better understand the disease and develop systems to effectively diagnose and treat the patients, protect the health care workers (HCWs), and prevent spread (1). However, the ongoing pandemic has created impediments in healthcare delivery, including imaging services. Healthcare services, health education, and health information have seen a shift to remote delivery through telehealth (2). All noninvasive imaging such as digitized x-rays, computed tomography scan, magnetic resonance imaging, and ultrasound scan can be interpreted through teleradiology.

Communicable diseases like COVID-19 constitute a threat to HCWs and low- and middle-income countries (LMICs) frequently struggle with limited physical and human resources (4). Many radiological practices have embraced teleradiology to minimize physical interaction among HCWs in closed working spaces and between patients and HCWs. This promotes safety and may curb the spread of SARS-CoV-2. The significant imbalances between high-income countries and LMICs are a lack of access to healthcare and a lack of adequate training for HCWs (5). Inaccurate interpretation of radiological images leads to higher morbidity and mortality in Africa (6). Sub-Saharan Africa has an enormous health care burden, but is the region with the lowest level of economic, technological, and internet development (2). Telemedicine in Africa is limited by basic infrastructures such as steady electrical power, cellular network coverage, and slow internet connectivity (7).

In developing countries, radiologists are frequently fragmented (8). The ease of enrolling teleradiologists can address short-term staff shortages in LMICs. Current levels of internet connectivity can enable telemedicine solutions to be implemented in most urban areas (4). A telemedicine center's operational expense is lower than running primary care facilities with specialized services for similar population coverage, thus, reducing the economic burden on constrained health-care facilities and systems (4). Teleradiology could also help bridge the gap in providing equitable access to diagnostic imaging in developing countries. It may be the most practical solution to dealing with the shortage of on-site experienced radiologists.

In order to combat the current pandemic, many LMICs have adopted telehealth practices. India has launched its first COVID-19 test bus based upon indigenous technology to facilitate inexpensive and rapid testing of people in dense urban areas while protecting HCWs from unnecessary exposure to infected patients. The medical equipment on board comprises a low dosage digital x-ray, real-time teleradiology, contactless swab testing, and instant RNA testing (8). Teleradiology was launched on June 24, 2020, in Jammu and Kashmir and more than 10,000 patients benefitted from it in less than 2 months (<https://www.greaterkashmir.com/>).

Telemedicine has been utilized effectively in radiology (2), however, it is stunted in LMICs compared to high-income countries (3). We urge the governments in LMICs to leverage telehealth tools to strengthen their healthcare systems. This would bolster their response to the pandemic, augment the existing strained healthcare systems and ensure the safety of HCWs. We offer the following recommendations: (i) Establish transcontinental, inter-regional, intraregional, and national networks of radiologists to improve the reach of radiology care; (ii) Integrate teleradiology practices into their radiology service systems; (iii) Ensure healthcare training of radiological staff. (iv) Establish reliable information and communications technology networks; (v) Establish a suitable platform for telecommunication that transmits images at a reasonable rate; and (vi) Consider an immediate allocation of funds and technical support to deal with the COVID-19 pandemic in the short term.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

ACKNOWLEDGMENTS

None.

FINANCIAL SUPPORT

No financial support was acquired for this article.

AUTHORS' CONTRIBUTIONS

M.J.T. and S.A. conceived the idea, H.Q.U.A., M.J.T, S.W., S.A., and I.U. performed a literature review and wrote the initial manuscript. Z.Y. and I.U. reviewed the manuscript and critically revised it to the final form. All authors approved the final version of the manuscript.

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<https://doi.org/10.1016/j.acra.2021.06.020>