LETTER TO THE EDITOR

Mapping the Changes on Incidence, Case Fatality Rates and Recovery Proportion of COVID-19 in Afghanistan Using Geographical Information Systems

To the editor,

We read with great interest the article by Pradhan et al., about the current interventions for the Coronavirus Disease 2019 (COVID-19) prevention (1), discussing different strategies to be applied at individuals for avoiding the Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission. We would like to compliment and discuss the importance of prevention and public health of the use of geographical information systems (GIS)-based mapping, recently applied in other few countries (2,3), now in this analysis, for Afghanistan. Even more, Afghanistan is a country where few studies have been so far published (4−6). For these reasons, we have developed epidemiological maps of the incidence rates using official populations, by provinces, as well for case fatality rates (CFR%), mortality rates, and the proportion of patients recovered, from COVID-19 in Afghanistan using GIS.

Surveillance cases, deaths and recovery data of the cumulative number of April 26 and May 3, 2020, officially reported by the Afghanistan health authorities were used to estimate the cumulated incidence rates, mortality rates, CFR% and recovery rate (%) on those dates using reference population data on SARS-CoV-2 RT-PCR confirmed infections (cases/100,000 pop) and to develop the maps by provinces, using the GIS software Kosmo® 3.1. Starting on February 24, 2020, the first cases of SARS-CoV-2 was confirmed in a 35 year old man (3). He was part of a group of three returning travelers at Herat, who had recently come from Qom, Iran, suspected of COVID-19 infection (5). On March 22, 2020, the government took the lockdown measure for the city of Herat. Four days later extended the lockdown to Kabul, Kandahar, and Logar provinces.

Up to April 26, 2020, after 62 d of epidemics, 1,463 cases of COVID-19 were reported in the country, for a cumulated rate of 4.76 cases/100,000 population, reaching 2,706 cases during May 3, 2020, for a rate of 8.81. All the provinces of the country have been affected except Nurestan (Nuristan), with rates ranging from 0.2 (Badakhshan) to 28.9 cases/100,000 population (Nemroz/Nimroz) (Figure 1). At Herat (Hirat), where the first case was reported for May 3, 2020, 541 cases were confirmed with 25.8 an incidence rate of cases/100,000 population. The highest number of cases have been reported in Kabul, the capital, 755, with a rate of 15.0

cases/100,000 population (Figure 1). From April 26−May 3, in addition to Nimroz, two additional provinces reached an incidence higher than 25 cases/100,000 population, Hirat, and Kandahar (Figure 1). From the total number of cases up to May 3, 2020, 85 died (3.1%), but that CFR% ranged at provinces from 0−50% (Jowzjan and Paktika) in the two time-point measured (Figure 1), yielding a cumulative mortality rate of 0.28 deaths/100,000 population at the national level, ranging at provinces from 0−0.88 deaths/100,000 population (Balkh) (Figure 1). Finally, 345 cases have recovered (12.7%), also ranging in provinces from 0−55% for May 3, 2020 (Figure 1). Maps showed that while southwestern provinces have a higher incidence, the fatality and mortality rates seem higher in northeastern provinces (Figure 1).

Afghanistan cases originated from a neighbor country, Iran, which currently is in the top ten of countries globally regarding COVID-19 cases (207,525) (June 22, 2020) (5). At the same time, that contrast highly with another border country, Turkmenistan, which has no reported cases yet (Figure 1). But the government has worked to control information about the virus, and experts suspect that it may be spreading in the country unreported.

Given the current findings, population-based interventions should be targeted, especially in those high-risk areas for occurrence and fatalities. In Afghanistan, health care delivery is already a major cross-cutting challenge. Although efforts to rebuild the health care systems in Afghanistan have been made, both acute and chronic illnesses remain as significant medical and critical governance gaps to be remedied. Besides, health care facilities and medical equipment are not adequate in the country. There is a need for medical and scientific expertise to clinically and sociologically contextualize and interpret diagnostic tests as well as drugs and vaccines that will be deployed in the coming months as part of the planetary collective response to the COVID-19 pandemic (6).

Besides, specific studies in vulnerable populations such as those displaced by conflicts and people affected by natural disasters should be performed. Afghanistan is still endemic for many emerging infectious diseases such as poliomyelitis and measles (7). Because of inadequate health-care services in Afghanistan, many ill people will try to seek medical care overseas. At the same time, broad travel restrictions and flight suspensions come into force in the country.
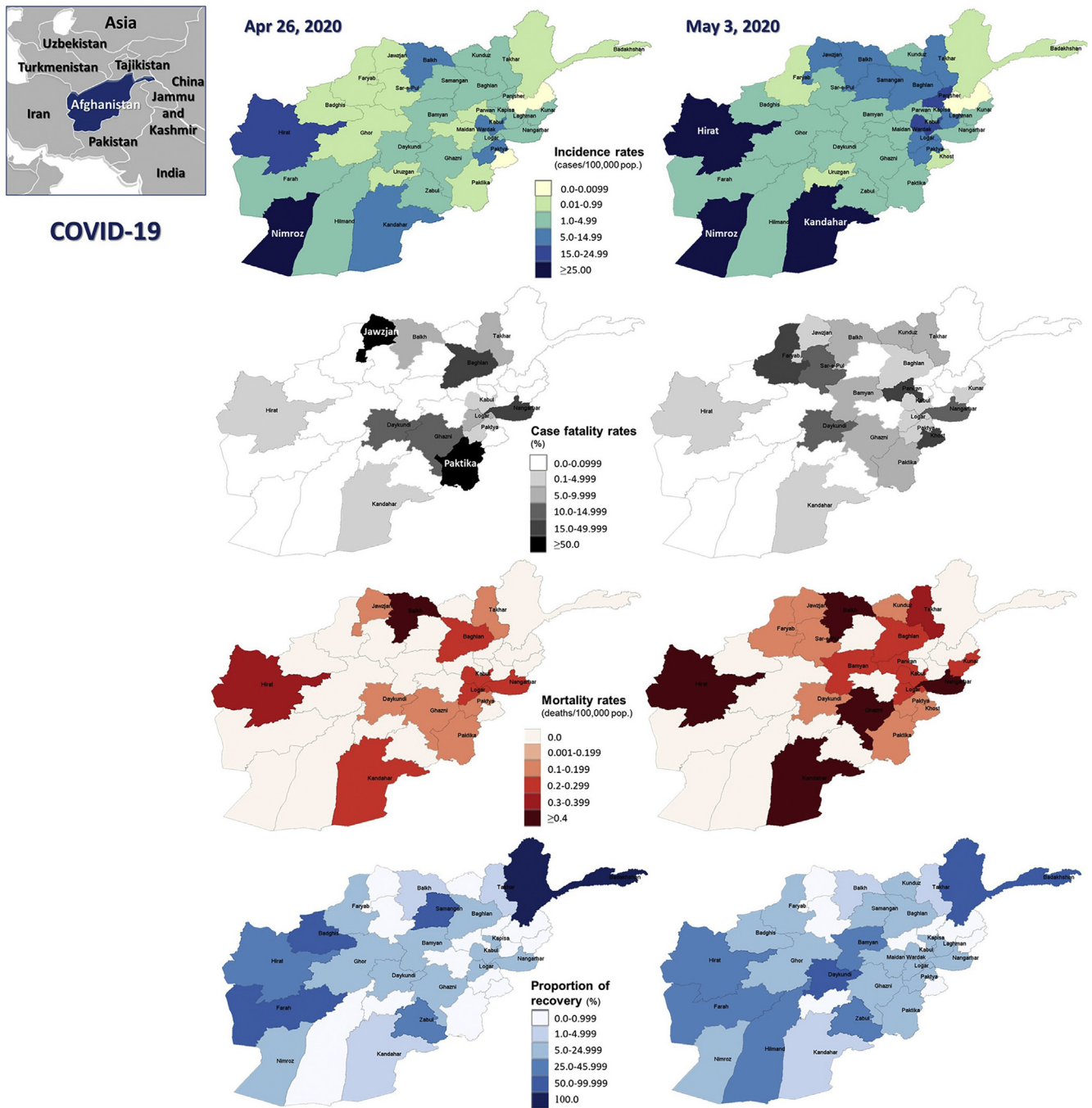
Figure 1. Key points related to the current technological advances on emerging approaches to improve control and particularly diagnosis of the SARS-CoV-2/COVID-19 pandemic.

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Conflicts of Interest

None.

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SAYED HAMID MOUSAVI

Department of Clinical Biochemistry
Faculty of Medical Sciences
Kateb University
Kabul, Afghanistan
Afghanistan National Charity Organization for Special Diseases
Kabul, Afghanistan

SHAFI ULLAH ZAHID

Department of Neurosurgery
Jamhuriat Hospital
Kabul, Afghanistan

KALIMULLAH WARDAK

Department of Orthopedics and Traumatology
Wazir Akbar Khan Hospital
Kabul, Afghanistan

KAZIM ALI AZIMI

Medical Research Center
Razi Institute of Higher Education
Kabul, Afghanistan
Central Public Health Laboratory
Kabul, Afghanistan

SAYED MOHAMMAD REZA HOSSEINI

Department of Public Health
Faculty of Medical Sciences
Ghalib University
Kabul, Afghanistan

MARZIA WAFAEE

Faculty of Chemistry
Kabul University
Kabul, Afghanistan

KULDEEP DHAMA

Division of Pathology
ICAR-Indian Veterinary Research Institute
Izatnagar
Bareilly, Uttar Pradesh, India

RANJIT SAH

Department of Microbiology
Tribhuvan University Teaching Hospital
Institute of Medicine
Kathmandu, Nepal

ALI A. RABAAN

Molecular Diagnostic Laboratory
Johns Hopkins Aramco Healthcare
Dhahran, Saudi Arabia

KOVY ARTEAGA-LIVIAS

Universidad Científica del Sur
Lima, Peru
Facultad de Medicina
Universidad Nacional Hermilio Valdizán
Huánuco, Peru

D. KATTERINE BONILLA-ALDANA

Semillero de Zoonosis
Grupo de Investigación BIOECOS
Fundación Universitaria Autónoma de las Américas
Sede Pereira, Pereira, Risaralda, Colombia
Public Health and Infection Research Group
Faculty of Health Sciences
Universidad Tecnologica de Pereira
Pereira, Colombia

ALFONSO J. RODRIGUEZ-MORALES

Universidad Científica del Sur
Lima, Peru
Public Health and Infection Research Group
Faculty of Health Sciences
Universidad Tecnologica de Pereira
Pereira, Colombia
Grupo de Investigación Biomedicina
Faculty of Medicine
Fundación Universitaria Autónoma de las Americas Pereira
Risaralda, Colombia

Address reprint requests to: Alfonso J. Rodriguez-Morales, Master of Clinical Epidemiology and Biostatistics, Universidad Científica del Sur, Lima, Peru; Phone: (+57) (300) 8847448; FAX: (+57) (6) 3213206; E-mail: arodriguezm@utp.edu.co