

Developing COVID-19 emergency response centres in geographically challenged areas of Pakistan: A case study of the Aga Khan Development Network

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Abstract

The inevitable COVID-19 global pandemic has severely affected Pakistan's fragile healthcare system. The system was already facing a significant burden of non-communicable and other infectious diseases, and the pandemic further exacerbated the disease and the healthcare burden in Pakistan. In such a situation, people who live in geographically challenged areas with limited healthcare infrastructure and resources are more vulnerable to the impacts of a pandemic. The authors share the experience of the development of emergency response centres (ERCs) in the rural remote mountainous regions of Pakistan—Chitral, an initiative that the Government of Pakistan and Aga Khan Health Service Pakistan (AKHSP) implemented to manage the increasing rates of COVID-19 cases in these areas. The authors outline the processes that need to be undertaken to develop such healthcare facilities in a short period of time and discusses the challenges of establishing and operating these centres and the lessons learnt during and after the development of these centres in the remote mountainous regions of Pakistan.

KEYWORDS

COVID-19, Emergency Response Centres, Pakistan, Rural areas

1 | INTRODUCTION

The novel coronavirus disease–2019 (COVID-19) global pandemic has affected the healthcare systems of many countries across the world, especially those of low- to middle-income countries (LMICs). The healthcare systems in LMICs already face the significant challenge of addressing the increased burden of non-communicable and infectious diseases, coupled with serious capacity and resource constraints.¹ However, the rising burden of COVID-19 related cases and deaths in these countries has further compounded these challenges.

Pakistan is among the few countries in South Asia that continues to have an onerous burden of communicable and noncommunicable diseases that have had detrimental effects on people in terms of economics, morbidity, and mortality.² Because of the failure to achieve good healthcare standards, Pakistan has become a reservoir for infectious diseases. Thus, over the years, several viral epidemics such as polio, hepatitis, dengue, measles, acquired immune deficiency syndrome, and many more have affected the lives of many individuals.² Likewise, the unprecedented COVID-19 global pandemic has further jeopardised the healthcare system in Pakistan, where 63.09% of the country's population live in rural and inaccessible areas.^{2,3} During the COVID-19 outbreak, it became more challenging for the people in the rural, landlocked mountainous regions of Pakistan–Chitral to access healthcare facilities and services because of the lack of healthcare providers; of isolation wards and emergency centres; of essential equipment and supplies in healthcare facilities such as face masks, gloves, and protective gowns; and of public transportation in these geographically challenged regions.⁴ Moreover, the testing and screening facilities have been inadequate to meet the required target in these areas.^{5,6} Similarly, the response plan lacked interventions to manage COVID-19 caseloads in the geographically challenged rural areas of Pakistan. Hence, people who live in areas such as Chitral have faced significant challenges in accessing health services related to COVID-19.

To increase access to healthcare services during this outbreak COVID-19, emergency response centres (ERCs) were established in collaboration with the Government of Pakistan and Aga Khan Health Service Pakistan (AKHSP). The purpose of establishing these centres is to manage the COVID-19 caseloads in geographically challenged regions where access to public health services is extremely limited. In this paper the authors share the experience of the development of COVID-19 ERCs and highlight the challenges in establishing and operating these centres and the lessons learnt during and after the development of these centres in the rural mountainous region of Pakistan.

2 | PROGRAM DESCRIPTION: ESTABLISHMENT OF COVID-19 ERCs IN CHITRAL

2.1 | Demographics of Chitral

Chitral is the northernmost landlocked district of Khyber Pakhtunkhwa province, located across the border from Afghanistan and at the extreme northwest of Pakistan.⁷ It is a disputed territory and lacks strong government support for institutions.⁸ It is accessible via road or air when weather conditions are favourable.⁸ The provision of public sector services in the district has been very limited, and the services have been unable to reach the majority of the remote and isolated rural communities.⁸ As per the latest census of 2017, the total population of Chitral district is 447,362,⁹ about 80% of whom population live in rural and geographically risky areas; whereas the remaining 20% live in the urban areas of the district.⁷ The majority of the people in the district live below the poverty line; the unemployment and underemployment rate is 70%, and the average household income is US\$0.50 per capita per day.¹⁰

The healthcare system in Chitral is comprised of two primary formal sectors of healthcare providers, including the government Department of Health and AKHSP, a not-for profit company whose purpose is to

achieve the highest quality of life for its catchment populations by improving their overall health and well-being.^{11,12} However, because many of the healthcare facilities are short of medical staff, including nurses, and medical equipment, it is difficult to provide quality healthcare services, and the COVID-19 outbreak has greatly challenged the weak healthcare system in Chitral. Hence, a strong public private partnership is required to face this emerging challenge.

3 | PROCESSES UNDERTAKEN TO DEVELOP COVID-19 ERCs IN CHITRAL

3.1 | Community mapping and natural hazard risk assessment for the development of ERCs

Throughout the year, the communities in Chitral are exposed to various climatic hazards, including heavy snowfall in the winter, flash floods in the summer, glacial outbursts, landslides, soil erosion, occasional earthquakes, and subsequent outbreaks of diseases.⁸ Thus, to rapidly establish COVID-19 ERCs in this region, it was essential to carry out a community mapping and a natural hazard risk assessment prior to the development of these centres. In doing so, AKHSP identified three potential land areas that are less prone to natural hazards and accessible to people who live in isolated areas to establish COVID-19 ERCs. This included transforming Aga Khan Education Service's existing hostel for girls in Upper Chitral into an ERC and constructing two ERCs, each located in a village in upper and lower Chitral.

3.2 | Establishment of COVID-19 ERCs

AKHSP collaborated with the Department of Public Health and the Aga Khan Agency for Habitat (AKAH) to establish ERCs in selected zones of Chitral. AKAH is a sister organisation of AKHSP and ensures that poor people who live in high-risk areas are safe and protected from the effects of natural disasters.¹³ Thus, AKAH provided expertise in terms of the infrastructure and rapid construction of the centres in these selected zones of Chitral. The agency reviewed and considered national and international guidelines for the design and operationalisation of the ERCs. Hence, based on the guidelines, the purpose-built ERCs have used locally



FIGURE 1 Emergency Response Centre in Garamchasma, Lower Chitral for COVID-19 Patients Figure 1 [Colour figure can be viewed at wileyonlinelibrary.com]

manufactured prefabricated sandwich panels that can be adapted to the hard and soft structure requirements of the location site.¹⁴ These panels are quick to install, durable, and noncombustible and consist of good thermal insulation to regulate the temperature and protect against extreme cold and hot weather.¹⁴ The design of the ERCs includes separate areas for donning and doffing personal protective equipment (PPE), waste management, laundry and linen management, a staff lounge, patient triage, and negative ventilation rooms to manage critical COVID-19 patients.

The first ERC was established in May 2020 at Aga Khan Education Service's girls' hostel in the capital of Upper Chitral, Booni. The 28-bed ERC services a population of 106,417, which is at least 60% of the total population of Upper Chitral. The staff in this ERC manage mild to moderate as well as critical cases of COVID-19. About 18 beds are allocated to mild to moderate cases, 7 beds to severe cases, and 3 beds to critical cases. A second ERC, built in June 2020 in Upper Chitral in the village of Mastuj, 60 kms from Booni, contains 20 beds for mild to moderate cases of COVID-19. It services a population of at least 60,000 in Upper Chitral. The third ERC, established in June 2020 in Lower Chitral in Garam Chashma, manages mild to moderate cases of COVID-19; it services at least 30% of the total population of Lower Chitral, approximately 81,000 people. All three ERCs' COVID-19 services are free of cost.

3.3 | Procurement of required medical equipment

To ensure the effective management of mild, moderate, and critical cases of COVID-19 at these centres, they purchased the necessary medical equipment before they opened, including patient beds with accessories, PPE, patient gowns, oxygen supply, medications that included IV fluids and antibiotics, standard crash carts for each ERC, suction machines, two ventilators, and four bilevel positive airway pressure and four continuous positive airway pressure machines with all of the accessories. The ERC in Booni is equipped with ventilators and these machines.

3.4 | Development of standard operating procedures and protocols

Because the disease is highly infectious and transmissible, it was essential to develop standard operating procedures and protocols to limit its spread at the centres. Before the ERCs launched, standard operating procedures and protocols were based on national and international guidelines and written in easy-to-understand local language for the staff. These protocols, displayed on the walls of the centres, concern the use of PPE, hand and respiratory hygiene, screening and triaging of suspected COVID-19 patients, burial and safe management of the dead bodies of patients with suspected or confirmed cases of COVID-19, cleaning and disinfection of surfaces, linen and laundry management, and food disposal and waste management.

3.5 | Recruitment of nursing staff and capacity building of newly hired and existing nursing staff

To ensure sufficient staffing for the centres, 17 doctors, 20 nursing staff, 11 nursing interns, 7 nursing assistants, and 25 support staff were hired. The staff attended a three-day capacity-building workshop on treatment pathways, standard operating procedures, and the clinical guidelines for infection control and prevention at the centres. The workshop also enhanced the staff's clinical practices, including PPE donning and doffing, hand hygiene, cleaning and disinfection of patient areas, triaging of suspected COVID-19 patients, clinical management of mild to moderate COVID-19 patients, and assessment for discharging COVID-19 patients.

3.6 | Contact tracing of visitors of patients at ERCs

According to the Center for Disease Control and Prevention, tracing contacts and alerting them to exposure are key in assisting patients with COVID-19 and limiting the spread of infection.¹⁵ However, in Chitral, contact tracing of patients' visitors in the ERC was challenging. Because of the stigma and myths associated with the disease, the cultural values of patients' families, and the limited testing facilities, it is difficult to trace contacts who have been exposed to the disease. Therefore, the local government, local community-based organisations, and community volunteers contact-trace exposed individuals. As a result, the local government provides free COVID-19 testing services at Tehsil and district health quarter hospitals in all communities, and community volunteers visit patients' families to convince them to be tested for COVID-19. The designated healthcare facilities collect the samples, send them to a tertiary care hospital in Peshawar, the capital of Khyber Pakhtunkhwa province, and inform the patients of their results within one or two days.

3.7 | Development of information posters for the visitors in ERCs

To limit the spread of infection and prevent outbreak at the ERCs, visitor guidelines displayed at the entrances and exits of ERCs stipulate that visitors are not allowed inside; however, they can visit patients from outside the ward entrance. Moreover, the posters specify visitor protocols for hand hygiene, physical distancing, and the wearing of face masks.

4 | ISSUES AND CHALLENGES THAT HEALTHCARE PROFESSIONALS FACE IN CARING FOR COVID -19 PATIENTS IN ERCs

Managing a pandemic in remote areas of a country can be challenging not only for government stakeholders, but also for the healthcare professionals. The staff at the centres face several challenges in caring for COVID-19 patients. Given the nature of the disease and the geographic location of the district, they have felt general anxiety and the fear of contracting the disease. Moreover, wearing PPE while they provide continuous care for COVID-19 patients is also challenging for healthcare staff. The prolonged use of PPE during long shifts in a physically demanding environment has affected them not only physiologically, but also psychologically. Other challenges are stigmatisation and discrimination from the community. Because of the fear of stigmatisation and the risk of quarantine, the staff have been hesitant to undergo periodic screening and testing for COVID-19. Hence, it is challenging to convince them to screen and test for the disease regularly. Many staff have also faced backlash and abuse from patients' caregivers as a result of the myths about COVID-19 that prevail in the community. Many community members believe that the disease is not serious and that healthcare facilities are profiting by deliberately diagnosing patients with COVID-19 and admitting them to ERCs. Hence, patients have refused to admit themselves at the centres, and it is a challenge for the staff to counsel patients to receive timely treatment. In addition, because of the geographic nature of the district and the limited resources available, it is difficult to train staff regularly on standard infection control and prevention protocols and for the staff to constantly adapt to the updated clinical infection control and prevention guidelines as the disease evolves. Hence, these various challenges eventually resulted in increased turnovers of healthcare staff at the centres.

The pandemic has also affected the delivery of healthcare services specifically delayed the non-emergent and in some instances emergency surgeries. Healthcare staff and resources are diverted to respond to COVID-19 cases therefore, scheduled surgeries have been cancelled and emergency surgeries got delayed due to shortage of staff, PPE, and unpreparedness of healthcare staff to use PPE and new infection control guidelines while performing emergency surgical procedures. Few studies have reported the change in surgical practices in

light of the COVID-19 pandemic and published new recommendations on scheduling and performing surgical procedures during the pandemic.¹⁶⁻¹⁹ However, adopting new protocol measures in resource constraint setting like Chitral is an additional challenge that healthcare professional faced along with caring for the patient with COVID-19 infection.

5 | PROGRAM OUTPUTS AND THE LESSONS LEARNT

ERCs in the geographically isolated areas of Chitral have managed 209 COVID-19 positive cases to date. Most of the patients are mild to moderate cases; few have had severe symptoms. Of 209 patients, 6 were 80 years or older; they presented with mild to moderate symptoms and were successfully treated. Successful case studies include the recovery of a 74-year-old patient with multiple co-morbidities who was admitted to the ICU at a centre. Similarly, a 103-year-old patient presented with mild to moderate symptoms was successfully treated and discharged from the centre. Because the centres are well equipped with medical and human resources, the staff have not had to make referrals but have managed critically ill patients in a timely and effective manner. Moreover, the accessibility of the centres has prevented delays in seeking and receiving care.

Several lessons can be learnt from this case study. A major lesson is the importance of collaboration and engagement with key stakeholders. To develop and successfully implement a COVID-19 preparedness plan in a geographically isolated district, it is very important to engage with the key stakeholders in the community. Their



FIGURE 2 Emergency Response Centre for COVID-19 Patients, Booni, Upper Chitral Figure 2 [Colour figure can be viewed at wileyonlinelibrary.com]



FIGURE 3 Staff at Emergency Response Centre performing COVID-19 Test on a 103 year old Patient at the Figure 3 [Colour figure can be viewed at wileyonlinelibrary.com]

involvement helped AKHSP management to identify and arrange potential human, financial, and other relevant resources to implement the plan successfully and enabled AKHSP to ensure adequate COVID-19 testing services for the community and contact tracing of exposed individuals. Similarly, rapid community mapping and natural hazard risk assessment are essential before investing resources to develop facilities in geographically risky areas; they enabled AKHSP to identify potential sites for ERCs in the district and management to determine the required resources and expertise to develop them. Last, it is extremely important to contextualise healthcare interventions in community settings. The development of standards for procedures and clinical protocols in easy-to-understand and local language enabled the staff to grasp the core concepts of infection control and prevention quickly and communicate smoothly with patients and their families regarding the disease processes and the public health measures that they would follow.

6 | CONCLUSION

COVID-19 has been an unprecedented public health challenge for many countries around the world. It has drastically affected the healthcare systems especially in geographically risky areas and with the limited resources of LMICs. People who live in risky mountainous areas with limited health and other resources are more vulnerable to the impacts of a pandemic. It is therefore essential that governments develop and create robust pandemic response plans to recognise and address the needs of the most vulnerable people. The development of ERCs in geographically challenged areas with essential human and financial resources is an effective public health strategy to address and meet the needs and demands of people who live in such regions during a pandemic.

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CONFLICT OF INTEREST

The authors have no conflicts of interest.

ETHICS STATEMENT

Not Applicable.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

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