

REVIEW ARTICLE

HANDLING OF COVID-19 IN PERIPHERAL HEALTHCARE INSTITUTIONS IN NEPAL

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ABSTRACT

Background: With the increase in COVID-19 cases globally as a pandemic, the concern should be there for the management of such disease from a different level of healthcare set up. The aim of this review was focused on the assessment of COVID-19 cases from the healthcare setups in the periphery.

Methods: The English-language databases of Google Scholar, PubMed, were searched using the following keywords: 'COVID-19', 'handling of COVID-19', 'primary healthcare center', and 'Nepal'. All the related articles published in journals as well as newspapers were considered for this narrative review

Results: There are 7177 cases in Nepal with 20 mortalities, 1167 recovered cases, and 5990 cases under treatment as of June 17, 2020.

Conclusion: As there is no proven treatment for COVID-19, countries with low economic income like Nepal are facing great challenges by the disease due to poor quarantine facilities and limited testing capacities. The peripheral healthcare institutions in Nepal are doing their level best for management of COVID-19 cases though lack of adequate resources is still there. Cases in Nepal are rapidly increasing and it is necessary to allocate proper resources based on the areas of most need to control the outbreak.

INTRODUCTION

Being reported initially as a cluster of pneumonia cases on 31 December 2019 in Wuhan city of China, the COVID-19 did not even take a single month to be declared as a public health emergency of international concern (PHEIC) by the world health organization (WHO). It was later declared as a worldwide pandemic within three months due to more than 118,000 reported cases around 110 countries of the globe with the anticipated risk of further global spread.^{1,2} The causative agent of the disease was isolated as a new type of coronavirus (nCoV) and later named as severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) by the international committee on taxonomy of viruses (ICTV) on 11 February 2020.³ As of 17 June 2020, there were 8,061,550 cases of COVID-19 worldwide with 440,290 confirmed deaths.⁴ It is a respiratory disease mostly spread through airborne transmission and by taking unclean hands into the eyes, nose, or mouth after touching an infected surface. A wide spectrum of mild to severe symptoms are seen in COVID-19 cases such as fever, flu-like symptoms to acute respiratory distress syndrome (ARDS), and pneumonia with the increased risk in geriatrics and patients with co-morbidities.⁵

Nepal is a developing country that falls under low-income economies category due to gross national income (GNI) per capita less than \$1,025 as per World Bank data.⁶ The adequate healthcare facility in Nepal is not up to the reach of all citizens, where most of the tertiary care hospitals are located centrally and in urban areas. Nepal reported the first COVID-19 positive case on 23 January 2020 and at present, there is total of 6,211 cases with death tally to 19.^{7,8}

HEALTHCARE OPERATION IN THE PERIPHERY

Under the Government of Nepal, Ministry of Health and Population (MOHP), there are 125 public hospitals, 198 primary health care centers (PHCs), 3808 health posts, and 1822 public facilities involved in health care in Nepal.⁹ There are 11 central hospitals, 11 zonal hospitals, and 4 regional hospitals in Nepal.¹⁰ With the increasing risk of COVID-19, the MOHP had initially set up 5 hub hospitals and 13 key satellite hospitals in January for the management of COVID-19.⁷ Now, there are 25 hub hospitals (Figure 1)¹¹ and 22 reverse transcription-polymerase chain reaction (RT-PCR) testing centers for the management of COVID-19 cases in Nepal as of June 15, 2020 along with established 4 health emergency operation center (HEOC), 2 central, and 4 regional medical stores.^{11,12}

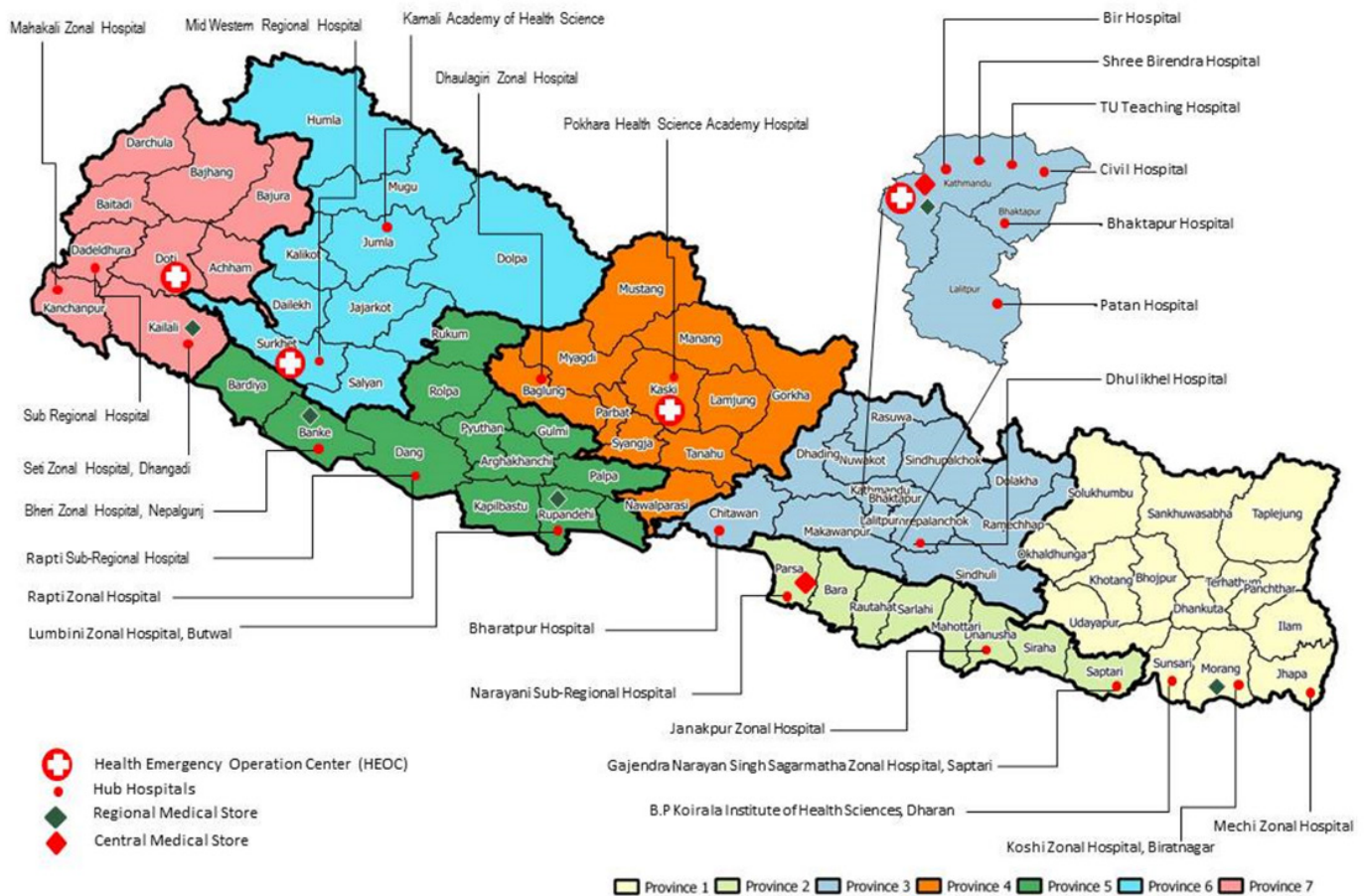


Figure 1: Different hub hospitals for COVID-19 management

Table 1: Level wise health management for COVID-19

Health service center	Services	Management offered
Health posts and Primary health care centers (PHCs)	Basic counseling and referral services	Consultation and transport of suspected COVID cases to COVID clinic or hospital via ambulance services
Province hospital or hospitals conducting COVID clinics	Isolation	Isolation and protocol-based treatment of suspected cases after screening
	Sample Collection	Sample collection and transport to nearest labs
	Referral services	Protocol-based transfer of laboratory-confirmed mild cases to Level 1 COVID hospital, severe/ complicated cases to Level 2 COVID hospitals, and so on via ambulance services
Level 1 hospital	Management of mild cases	Management of symptomatic/suspected cases in isolation as per protocol
Level 2 hospital	Management of moderate to severe cases or positive cases with moderate to severe symptoms	Treatment of moderate to severe cases in an intensive care unit (ICU)/ high care unit (HCU) as per protocol
Level 3 hospital	Management of cases needing multi-specialty support	Treatment of COVID cases requiring multi-specialty support

The Government of Nepal, MOHP has set up level-wise health service centers for better management of COVID-19 as shown in (Table 1).¹³

There are 127 hospitals conducting COVID-19 clinics, 13 Level 1 hospitals, 12 Level 2 hospitals, and 3 Level 3 hospitals in Nepal.¹³ Recently, a 100 bedded COVID-19 hospital has also

been established in province 1.¹² The hub hospitals work with satellite hospitals under the guidance of HEOC that is controlled by the MOHP. Screening is done in triage and outpatient departments(OPDs) for early detection of suspected cases in hub hospitals.¹⁴ Isolation beds in COVID wards stocked with personal protective equipment (PPEs) in all hospitals and ICU beds equipped with ventilators have been allocated in level

2 and 3 hospitals. Training of frontline healthcare and other professionals as per the protocol of WHO and revised by MOHP and Nepal medical council (NMC) is being carried out focusing on the rational use of PPE, safe method of sample collection, clinical care guidelines, etc.¹⁵ Although the government is getting PPEs from China, PCR kits from Singapore, medicine aids from India, the problem of shortage of PPEs and test kits in PHCs, district hospitals and other health centers is still there.^{16,17}

The healthcare setups in the periphery like health posts, PHCs, and simple hospitals without COVID-19 treatment facilities are working on preventive aspects providing awareness and basic counseling as well as referral services for suspected cases. Some setups are also involved in conducting throat swab test and sample collection as well according to the resources available. With the help of local representatives and government officials, people with travel history from high-risk areas are traced and kept in isolation for the suspected case and quarantine for normal one in their respective municipalities under the supervision of nearby healthcare set up. Those in isolation and history of contact with COVID-19 suspected patients are being tested for COVID-19 by rapid diagnostic antibody test (RDT) and later getting confirmed by sending a throat swab to the nearby centers for RT-PCR. After confirmation with RT-PCR, patients are shifted from isolation to COVID wards in Level 1/ Level 2 hospitals based on their disease severity. Most of the cases in Nepal are asymptomatic and managed with supportive care. After the patients are isolated in the respective COVID wards, they are monitored for any possible deterioration and development of symptoms in asymptomatic cases for the need to transfer to HCU or ICU in the respective centers or at higher level 2/3 hospitals if required. While in the wards, a detailed history is taken about travel for contact tracing and the information obtained is provided to the local authority.¹⁸ After the improvement in clinical symptoms and laboratory parameters along with two consecutive negative RT-PCR test results, patients get discharged with counseling for 2 weeks of self-isolation at home.

As the economy of Nepal is mainly dependent upon tourism and remittance from foreign workers along with agriculture, the chance of infection from the person with travel history is high. Most of the cases in Nepal have a history of travel from countries with higher COVID-19 cases. According to a study conducted in the far west of Nepal, among the 4 cases managed in Seti zonal hospital, 3 had travel history from abroad along with one due to local transmission and only one patient was symptomatic with fever and cough.¹⁸ In another study done in Nepal, it was found that nearly all 9 cases had a few mild types or no any symptoms.¹⁹ In early phase of pandemic, 28 cases of COVID-19 were reported as the highest number from a single area in Nepal from eastern Udayapur district and all treated at temporary COVID hospital (Koshi hospital) at Biratnagar.²⁰ Among such cases, initially, 12 Indian nationals residing in quarantine were tested positive and later 16 other people were also found positive after tracing the contact.²⁰ Such a case is more likely due to community transmission and would take the country into stage 3 of the pandemic.²¹

Initially, all the samples were tested at NPHL, but lately, testing has expanded to 22 different sites and the hub hospitals in the respective provinces have been sending the sample to the near most testing centers.²² To address the lack of medical personnel, the government has mobilized 30 doctors in Far western province. In the periphery, doctors have been preparing their modified surrogates from raincoats to operation theatre gowns and donning transparent sheath made visors due to the shortage of PPEs.

MAJOR CHALLENGES

The biggest challenge is management of the influx of a large number of people from India in quarantine centers. At present, there are 133 thousand people in quarantine in the entire country. The government has set up criteria for quarantine like maintenance of 1 meter distance between beds, provision of mosquito nets, availability of doctor, nurse and other healthcare professionals for every 100 people, PCR test, and health checkups for everyone twice daily. However, due to the weak financial status and constraint of health resources, physical distancing has not been properly applied at quarantine centers. There has been a lack of water, buckets, soaps, sanitizer, and lack of medical equipment except for the mask. There is no provision for separate toilets, kitchens, and separate rooms with overcrowding in most centers. One particular example is the quarantine center in Dhanusha where there was a lack of basic medical equipment for health personnel and hand hygiene measures like soaps and water.²³ It is important to quarantine people coming from India for at least two weeks in proper quarantine centers. Another problem is the fact that people coming at different timelines have been mixed in the centers leading to local conflict. For instance, people arriving 10 days ago and set up at quarantine should not be joined by people arriving 2 days ago. The mismanaged quarantine facilities create strain for local health centers and thus makes it difficult to manage cases. Another major problem faced by peripheral health institutions in Nepal is the lack of a proper amount of RT-PCR testing made available to level 1 and 2 hospitals. This problem is especially evident in the far-western region of Nepal where about 62 thousand people are in quarantine because of close ties with India and people returning due to loss of employment but the testing services were halted because of a backlog of thousands of throat and nasal swabs accumulated in the labs with limited testing capacity.²⁴ A critical question that has been a conundrum to the government of Nepal is whether to test all the people in quarantine or not. Multiple health experts and the supreme court of Nepal had urged the government to provide free PCR testing to all frontline health workers including the people at quarantine.²⁵ The recent directive given by Far Western Health Province Directorate states that people who have been in the quarantine for 14 days without symptoms can be discharged without any tests PCR or rapid diagnostic test.²⁶ The directorate argues that this decision was taken because of a lack of RDT kits and abundant PCR testing capacities in addition to a recent assertion by WHO that asymptomatic patients rarely transmit the disease.²⁷ There may be financial repercussions as to why

the government cannot test every people at the quarantine in addition to limited testing capacity. Lack of adequate testing has also been highlighted by the fact that most of the mortalities in Nepal have been in quarantine centers and it is a painful fact that tests have been done only after mortalities with news of 6 cases where testing was done only after deaths in media outlets.²⁸

The government had planned to resume telemedicine services last year at district hospitals in the initial stage before expanding them to PHCs. A central hub was planned to be set up in Kathmandu at the National Academy of Medical Sciences to help consultants resume health services in some districts. An online platform docnepal.com, for interaction between

doctor and patient, has also been launched for addressing health services during the COVID-19 pandemic.²⁹ Telemedicine can be a good answer to developing countries like Nepal where there is a shortage of specialist medical providers in remote areas and especially during the COVID-19 outbreak and its aftermath.³⁰

COVID-19 STATUS IN NEPAL

As of June 17, 2020; total 7177 RT-PCR confirmed cases reported in Nepal. Among them 20 died, 1167 recovered and 5990 under treatment (Table 2)³¹; recently, there is acute surge of COVID-19 cases and pattern is depicted by Figure 2.³¹

Table 2: COVID-19 status in Nepal

Total positive cases			RT-PCR tests		RDT	Quarantined	Isolated
Recovered	Treatment	Deaths	Positive	Negative	233,543	125,798	5,990
1,167	5,990	20	7,177	142,595			
Total: - 7,177			Total: - 149,772				

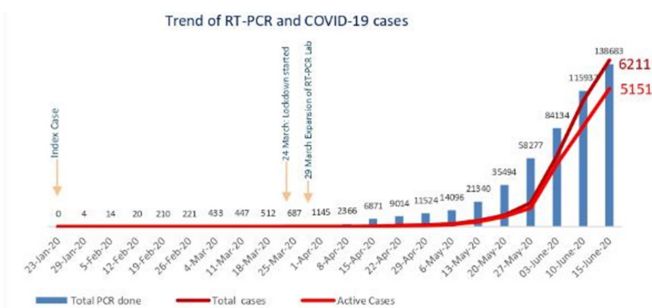


Figure 2: Trend of RT- PCR and COVID 19 cases in Nepal till June 15, 2020

Despite the effort of responsible citizens and government regarding preventive measures, the low literacy rate, poverty, and lack of awareness are the factors leading many people to the risk of infections. According to a study done by Pun et al (n=9), leaving 1 locally transmitted case, 7 patients who returned from Belgium, UAE, and India did not follow quarantine measures except only one patient who was returning from France.¹⁹ For the effective management of COVID-19 in the scenario of Nepal, the capacity of containment and treatment of the infected cases must be assured properly rather than planning for treating a mass epidemic at a time.³²

The limited availability of literature on related topic was the limitation for conduction this study.

WAY FORWARD

COVID cases in Nepal are shooting up day by day and the most important problems are lack of proper quarantine centers and limited testing capacities. With thousands of people returning from India and more people from the Middle East due to arrive in the country, proper management of quarantine centers with adequate physical spacing and proper facilities like drinking water and toilets remains the most important factor in peripheral

health institutions being able to manage the surge in the cases. It also remains equally important to increase PCR testing capacity and focus more on PCR rather than RDTs. All symptomatic people in quarantine centers should be tested as soon as possible. It is necessary to consider home quarantine in the far-western region if urgent expansion and management of quarantine centers are not possible. Mixing up people in quarantine arriving at different timelines should be avoided as much as possible. The government should encourage private hospitals to add PCR testing with public-private partnerships and appropriate training to necessary staffs. As the issue of COVID-19 transmission is evidenced from pre-symptomatic, symptomatic, and even from recently recovered patients, the identification of disease at the initial stage and control of spread is a challenging job in a developing country like Nepal. It is necessary to address ignorance and insufficient knowledge about the need to quarantine and self-isolate among the general public, especially those coming from foreign countries, and improve the quarantine area for the prevention of disease transmission as well. Awareness should be raised for preventive measures like hand washing, using masks, goggles, gloves, and social distancing across the entire nation by audio-visual aids, pamphlets, and social media. It is of utmost importance to provide the healthcare setups with adequate resources like expertise, PPEs, testing facilities, and medicines as well as guide the staff to raise awareness among the local people of the territory regarding preventive measures for proper COVID-19 management. The consideration should be given for accelerating and strengthening testing ability focusing on a targeted population to contain and effectively prevent the spread of disease. It is essential to promote the use of telemedicine services to cover the shortage of specialists in a remote area, provide routine follow up and manage non-COVID related medical checkups as well.

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