COVID-19 Pandemic and BPKIHS: our Situation, Endeavors and Future Direction

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Abstract

Rapid spread of COVID-19 infection reached Nepal in about 1 month of its first appearance in China in December 2019 and affected all spheres of life and society including health and education, like in other countries. We are unprepared for this new menace with many unknown facts and uncertainties when well developed set ups with advanced science and technology also seemed drowned. We attempt here to appraise our situation (condition, trend) and reflect on to the lessons (observations, and messages) that we draw in various major areas of the activities of B. P. Koirala Institute of Health Sciences. We become acutely aware about the adverse effects of this pandemic in its academic, service and research activities along with all other aspects. Amidst the challenges, we were forced to take steps in scattered and trial and error pattern. This pandemic has brought our deficiencies in health system into surface and is offering opportunity to review, revise and reform them. We all the stakeholders, i.e. students, patients, clients, teachers, faculties, staff and authorities are in the same boat; all need to be in healthy, balanced and functional state for fruitful travel. We have certain weaknesses, drawbacks, deficits; and some strengths that we now should realize to move ahead in this COVID era.

Key Words: Corona, COVID-19, BPKIHS, Situation, Lesson, health science education, health service, research

Introduction

Corona virus disease-19 (COVID-19) started with an outbreak of pneumonia caused by a beta group of corona virus in Wuhan City, Hubei Province, China in late December 2019. It started to simultaneously affect many countries; the WHO declared it as a Public Health Emergency of International Concern on January 30 and later changed to a pandemic on March 11, 2020.¹ The pandemic has various effects beyond health, e.g. shutdown of business, transport, schools, institutes, lockdown psychosocial issues and stress. It demanded for various strategies, including modification in health service delivery. Public have incessantly been flooded with its confusing and often divergent messages leading to panicky situation.²

The first recorded case in Nepal was confirmed on 23rd January in a 31 year old student who had returned from Wuhan. It was also the first recorded case in South Asia. The trend of infection and mortality was somewhat slow initially and there was apparently unconcerned attitude from the government and related stake holders but it was rapid in later parts of the pandemic so far in Nepal.³,⁴ Nepal had 10728 cases of confirmed out of 1,99,737 Polymerase Chain Reaction (PCR) and 287,863 Rapid
Diagnostic Tests (RDT) tested cases, with 24 deaths and 1,338 recovery of COVID-19 cases by June 25, 2020. Constant news of the ever increasing morbidity and mortality raised the concern; and the uncertainty, fear and anxiety at the same time in Nepal too. Many Nepalese foreign job holders returned home who seemed less health literate making them a threat for other people from infection risk point of view. This country is reeled under severe resource deficit; also for COVID-19 related facilities, e.g. Testing. Contact tracing, Isolation, Quarantine, hospital service, ventilators, PPE, masks, sanitation measures etc. Experts warn regarding the impact of sidelining other equal or even bigger preexisting health problems, e.g. infections (e.g. Dengue, TB, HIV), malnutrition, psychosocial issues (e.g. domestic violence, human trafficking), suicide and effect on the service providers. Government of Nepal imposed nationwide lockdown from 24th March, 2020. Ever since, the things have started changing in Nepal as well as at B.P. Koirala Institute of Health Sciences (BPKIHS). Academic programs were severely affected. In the beginning, almost all hospitals, including BPKIHS, closed their OPD services. Though emergency and in-patient services were open, due to lockdown and lack of access to public transport, travelling to hospitals was nearly impossible, especially for the village dwellers.

BPKIHS is a multi-speciality referral hospital, a centre of excellence. This tertiary care teaching institute in eastern Nepal with daily OPD loads of 3500-4000 cases and bed capacity of 850 needed to limit its services to dire essential and emergency services during the lockdown period. Health professionals were in demand personally to remain in least movement state in quarter and safe guard themselves while in duties; professionally to provide service safely and disseminate information wisely. It was a great challenge for our institute to pursue essential health services. Authority demanded all health professionals to be in duty. Emergency health service providers were in great threat and risk. This health institute put its efforts to help needy people by various strategies including: information displays, media coverage about the changed service patterns, starting help-lines and telemedicine services facilitating physical/social distancing.

This article summarizes on the scenario (situation, condition, challenges, endeavors made) and message (observations and lessons) in the direction of managing various activity areas of BPKIHS in the COVID-19 pandemic.

**Rapid response to COVID-19 pandemic at BPKIHS**

While the first case of COVID-19 was diagnosed in Nepal in mid-January 2020, the urgency for response set in from February end. Keeping in mind the different degrees of transmission of the virus, the response has been dynamic. The response in Wuhan set about a blueprint. Looking at the rapidly evolving threat of the COVID-19 pandemic, Rapid Response Committee (RRC) was formed in BPKIHS on 29th January 2020. The very next day, a case landed up in our Emergency. The patient had a fever of 102° Fahrenheit and had returned from South Korea 6 days back. At that time, we were just not prepared and finally with consultation at various levels, the patient was referred to Infectious Disease Hospital, Teku, Kathmandu. This set into motion our priorities. The initial challenges were to identify a separate area for dealing with suspects and to ensure that the concepts of Clean and Contaminated zone be respected. At the same time, segregation of manpower involved in COVID work needed to
be done. A separate area with individual rooms for each patient with a separate entry and exit were identified and converted to a 20 bed isolation facility. On the 5th March, a patient admitted in Infectious Disease Hospital, Teku ran away and landed up again in our ER. This time, we were prepared and the patient was managed in Isolation Ward. In the meanwhile, Screening Desk was started on 13th March, 2020. At the same time, a separate Fever Clinic was started on 23rd March, 2020 just a day before nationwide lockdown. The imposition of lockdown gave us more time to focus on the efforts towards the COVID response. We started training of health care workers (nurses, doctors to health aids and helper staffs) with regards to Donning and Doffing of Personal Protective Equipments (PPE), Infection prevention and control and the concept of clean and contamination zone. Separate trainings were conducted for laundry, sanitation and hospital waste management staffs. Orientation and training had to be given to ambulance drivers, local representatives and security personnel. BPKIHS was the second center in Nepal to start PCR services for SARS-CoV-2. Protocols were put in place for screening and testing for COVID. For non-COVID patients, help-line phone consultations and telemedicine were started even during lockdown. Unavailability of PPE warranted for the improvisations which ranged from making face shields with acetate transparency sheets to making local protective gowns. It also entailed preparation for pooling of ventilators and exploring the possibility of using one ventilator to multiple patients. All the concepts were relatively new. The occurrences of SARS, MERS and now COVID-19 have clearly indicated the need for respecting all the pre-requisite precautions. Ideally, these cases need to be managed in a separate center ensuring no mixing with non-affected cases; BPKIHS started with the same. Keeping in mind these considerations, a separate 100-bedded COVID Hospital is near functioning in BPKIHS now. Along with isolated location, it also has Negative Pressure ICU which will be one of a kind in Nepal. Adequate engineering and ventilation precautions have been considered. Besides that, another block, which used to function as a lodge, has been converted into a 100-bed Isolation facility. The COVID hospital will cater to sick COVID patients whereas the Isolation center will house asymptomatic and mildly symptomatic patients. These centers need to have qualified, well trained manpower with proper knowledge of PPE as well as Contact, Droplet and Airborne precautions. Thus, in the intervening period, BPKIHS has progressed from a makeshift 20 bedded Isolation Ward to 200 bedded COVID facility with proper attention to infection control details. BPKIHS has managed around 258 COVID-19 cases as well as conducted 10,567 PCR by July 7, 2020. To strengthen the response, a separate Infection Control Committee (ICC) has also been set up. BPKIHS has also provided expertise and manpower to Province-2 to tackle the challenging scenario there.

Health services at BPKIHS during COVID-19 pandemic

As in other arena, hospital services also had multiple difficulties and confusions during initial days. We suddenly had to close our routine OPD, elective surgeries. This increased rush to the emergencies and caused stress to health care workers (HCWs) as well as patients regarding routine and essential care. There was substantial fear of letting and getting
infections from patients. The scarcity of good quality surgical mask, face shield, goggles etc. was a great issue in the institute. However, because of the formation of Rapid Response Team (RRT), many questions and confusions were addressed. The remaining issues and confusions were solved with multiple meetings, discussions and formation of protocols.

The closed routine OPDs were addressed by providing help-line\(^5,9\), starting the telemedicine and online services through faculties. The patients were provided the treatment then and there and if hospital visit was necessary, they were advised to visit nearby hospital or BPKIHS. The hospital provided emergency and semi-emergency surgeries without any interruptions and delay. All the referral cases were treated without any hesitation. The relative scarcity of PPEs was addressed initially with use of local made things and later on effective supply from hospital administration. BPKIHS started with isolation ward with two properly functioning ventilators for suspected and diagnosed COVID-19 patients and later, a separate, level-3 COVID-19 Hospital to specifically treat COVID patients. RRT, along with drafting different protocols, made instructional video for proper donning and doffing. Departments organized educational sessions, e.g. department of Obstetrics and Gynaecology conducted an orientation class regarding COVID-19 to about 150 peoples who included nurses, helpers, and health aids of 9 different wards (10-15 in a class). These orientation class addressed most of the aspects of COVID-19 briefly viz. epidemiology, mode of transmission, precautions etc. This class boosted their moral, decreased their fear and apprehension while strengthening their precautionary steps during service provision.

It is said that the pandemic has not defected the system; rather it exposed the defective system. The pandemic once again stressed the importance of healthcare workers and their services to the society. Keeping in view as a most difficult curriculum, duration of the study, hazardous work environment to them and their families\(^10,11\) their salaries and services should be made adequate enough to comfortably maintain their life. It reminded all the healthcare workers must use PPEs while dealing with all kinds of infectious diseases. It has taught us the dire need of incorporation of advanced technology in health services; strengthening telemedicine, channelizing phone OPD, online registration, and online dispatch of reports. Most importantly, the pandemic has taught us the need of due allocation of budget for the health services and health science/ medical education.

**COVID-19 and Dentistry at BPKIHS**

The sudden emergence of this pandemic disease has shifted the focus of the healthcare system of the entire world in its prevention and management. All the medical and non-medical resources of the country are entirely engaged in combating this viral disease which has left other medical and dental disease aside. Although most of the dental problems are not life-threatening and can be deferred for the time being, the pain and psychological impact will impair quality of life. Due to the lockdown, public has difficulty in traveling to the hospital for the preventive and early interceptive measures the lack of which will lead to more corrective treatment in the future leading to an increased financial burden to the patients and workload to the clinicians. Most of the dental procedures release aerosol and considered as possessing a high risk for the transmission of infectious disease.\(^15\) Many COVID-19 patients are asymptomatic and
SARS-CoV-2 is found in the saliva of infected individuals. These facts have raised the risk of transmission of the virus from the patient to the operator and in turn, poses a threat to the future patients treated by the same operator. The dental profession is now in a difficult situation balancing between the two spectra: professional responsibility towards the patient and prevention of the spread of fatal infectious disease.

In the initial days of lockdown, all elective dental procedures were suspended and the College of Dental Surgery, BPKIHS remained open only for emergency dental cases. All the cases reported were scrutinized at the main entrance to rule out possible COVID infection and emergency management was performed with all protective measures to safeguard dental staffs and other patients. Considering the problems faced by the public, we reopened the out-patient clinics nearly after 2 months limiting the service to non-aerosol generating treatments and depending upon the need. However, the future of aerosol-generating procedures is still uncertain. The recommended guideline for dental practice states special precaution in the waiting area, careful hand hygiene, use of PPE, rubber dam isolation, the air filter in the operating room to remove contaminated air and environmental surface disinfection. To strictly comply with all these guidelines, we are planning an extensive transformation of the current infrastructure and training of the workforce with all the protective measures. We hope to get back into the new normal very soon providing all types of oral and dental care from the College of Dental Surgery, BPKIHS.

**COVID-19 and Psychiatry at BPKIHS**

There were concerns of psychiatric patients / their care takers about OPD service, increased/ worsening symptoms, and inquiry of services and local unavailability of medicines during lockdown. Peoples were afraid of coming to hospitals due to fear of infection, including health care workers since there was inadequate provision of personal protective measures. Also, all academic classes were postponed.

BPKIHS instantly started Helpline mobile phone service for needy ones to have free consultations with respective specialists at the same time when it closed OPDs. This appeared to be very useful in the time of crisis and helplessness to patients and their relatives. In our helpline phone, there were up to 25-30 calls a day from almost all Province-1 districts as well as from places like Rautahat, Lumbini, Kathmandu, Chitwan and even India. Later on, telemedicine service was also started, in which we are providing service to 15-25 patients per day, 3 days in a week. OPD was restarted from 19th May, 2020 with provision of protective measures like KN-95 face mask, face shield, gloves to all health care providers with social distancing, frequent hand sanitizing/ hand washing, not allowing patients/ caretakers without mask, limiting number of patients and their care takers. Initially, it was decided to take 15 patients with some flexibility, which was gradually increased in OPD. Also, after decision of Academics to conduct online classes, our department is taking classes of BDS 3rd year.

We are having frequent virtual meetings among faculties and with residents to discuss about future plans of department regarding clinical care and academic activities.

In initial days, we also had fear, anxiety and worries related to COVID-19 due to limited understanding and uncertainty of disease. Later, we realized that this is a long term battle and we must return to new normal, modify as per the
condition and continue our work in better way, though we were providing service through phone, at emergency and outside emergency informally. We also realized that not only patients need psychiatric care during such a situation, but many other healthy individuals including health care workers are also in the need of some kind of psychiatric support. Psychiatric faculties were actively involved in various awareness raising efforts, e.g. articles, webinars and media interviews for various stakeholders.\(^5\)\(^,\)\(^6\) We have lot to do now and in near future. For this, initiative has been taken by the department. Two committees have been formed including our faculty members (psychiatrists and psychologists): Telemedicine committee and COVID-19 Mental Health Committee, with objectives of helping the needy ones including health care workers (especially frontline workers). We also need to investigate into and research initiative is underway.\(^18\)

### Nursing perspective of COVID-19 pandemic at BPKIHS

Nurses and nursing faculty are integral parts of a teaching hospital. Once the teaching learning activities of the institute were postponed till further notice, there was feeling of emptiness and confusion in many of us. It took time to adjust ourselves to new modes of the activities as we missed the familiar face to face model of teaching and classroom interactions with students. There was a gradual conversion from on-ground to online education. It was not easy and not without mistake. However, it was also viewed as an opportunity to use alternative pedagogical approach and to explore virtual teaching sessions to complement classroom interactions. Though readily achievable and even exciting, it used to be near impossible earlier. This achievement was eased also with the webinars related to online education, conducted by Department of Health Professionals Education (HPED), BPKIHS.

There was also panic situation among nursing work force as the suspected cases were already started being admitted in Isolation Ward of the hospital. Several sessions of meeting of nursing faculty were held with Chief, College of Nursing and Matron. Nursing staff were worried also because of lack of masks and PPE. Various helping hands, groups and agencies came forward to provide mask and other PPEs for nurses; it helped keep the spirit going on among the nurses. Training sessions were organized by related departments on IPC, PPE, donning and doffing for nursing staff for quality care.

A team comprising some of nursing faculty of Psychiatric Nursing Department and Community Nursing Department realized and initiated for gap analysis among hospital nursing staff while working in pandemic situation. To address the need of the nursing staff in fear, stress and sense of uncertainty while working in this scenario, a ‘Psychosocial Support Program’ was developed and is being implemented. This fostered the interaction with the staff and liaison with hospital nursing administration to solve the issues. This is being extended to College of Dental Surgery and is also being done online through zoom meeting for nurses working in various hospitals of Biratnagar and for HCW working in certain communities of Dharan.

Two of the Nursing faculties were invited by the BPKIHS authority to help the nursing service administration in managing resources needed for inpatient care services during this crisis time. Other one was given responsibility of management of OPD services once the decision was made to start OPD services of hospital. All
other activities were reprioritized and faculties were engaged in activities like revision and compilation of procedure record of BSc. Nursing, reorganization of lab skill, planning of curriculum of other programs that are in the pipeline to start in near future, i.e. Bachelor in Nursing Science, Bachelor in Midwifery.

Finding our way as teacher and a nursing professional
While didactic learning is an essential element in nursing education, clinical experience is arguably more crucial, especially for those students nearing graduation. The ability to safely implement the skills and the theory learned during the program is the ultimate desired outcome of nursing education. We need to find out the way to use online clinical simulation activities for clinical skills and other soft skills. Current situation has warranted to explore how it can be achieved for the assessments and examinations and to complement practical hours defined in curriculum. It also demanded all level nursing staff working in hospital for regular on/offline trainings on IPC, Standard Precaution, pathogenesis of COVID-19, nursing management of patients with COVID-19, role of nursing managers in COVID-19 management, psychosocial support, and rational use of PPE etc. We all need to adjust to ‘New Normal’ keeping faith on ourselves. Together, we can win the battle against this pandemic. For this, Institute authorities need to ensure the safety of all health care workers and patients by arranging necessary facilities, e.g. PPEs.

Academics at BPKIHS during COVID-19 pandemic
With innovative, integrated, community-oriented and partially problem based curriculum; BPKIHS currently runs various academic programs of bachelor (MBBS, BDS, BSc.- Nursing, BSc. MIT), master level (MD, MS, MDS, MSc Basic Sciences, MSc Nursing, MPH and MDHA) and Subspeciality programs in DM (Cardiology, Gastroenterology and Hepatology, Pulmonary, Critical care and Sleep Medicine, Neonatology) and MCH (Urology, GI Surgery). It has total students of 1527 in academic year of 2019/20 in its 4 colleges: Medical, Dental, Nursing and Public Health. Its Central Teaching Hospital currently has 815 beds and well established major Clinical and Basic Science departments. This WHO Directory recognized health science institute has been home not only to Nepalese but also foreign (mainly Indian) students every year. Community-based training of students of this institute simultaneously provides services to local people and learning opportunities to its students through the concept of Teaching District Hospitals; currently serving 10 districts.

COVID-19 pandemic has affected health science/ medical education system worldwide. Health science institute has duty to consider its students’ health on one hand and the need to resume academic activities on the other. Closure of institute following the government notice warranted for innovative methods of delivering education, ensuring that students continue to receive teaching by different methods. Since April 26, online learning has been conducted to provide essentials for the continuation of medical education for first to final year undergraduate medical students of different programs in our institute. In this pandemic scenario, we got introduced with the novel methods of delivering education to medical students. Lectures have rapidly been developed.
to be delivered online as webinars using various platforms such as Zoom, dudal with technologically enhanced approaches already being proven to have high levels of engagement with medical students. Many having returned to their native homes during the coronavirus outbreak, online teaching platforms are beneficial due to their worldwide accessibility, ensuring that all medical students regardless of their current location are able to access webinars as they happen or can be recorded for later use. Communication is underway for collaboration with Nepal Telecom for e-Shikshya Package in highly subsidized Large Data Pack that works in all networks (2G/3G/4G).

During this pandemic, article processing of its official biomedical publication Journal of BPKIHS continued for upcoming issues with due attention to current situation to be incorporated in. Nepal Unit of UNESCO Chair in Bioethics organized nationwide competition to motivate our students to think about bioethical issues during the pandemic which had overwhelming participation across the country, also from India. Health Professional Education Core group came up with Medical education webinar series. We have done with online submission of thesis protocol of the students and evaluation of thesis by sending via e-mail during this pandemic.

A major challenge for medical educators at the present time has been to replicate the experience of clinical encounters. These encounters range from clinic and ward rounds to interactive patient sessions to training in interpersonal and inter professional communication and clinical skills. Calling back of all final year students and conducting due practical exams are major challenges in current situation. The institute plans to quarantine all students in hostel and to support national and international students for travel by providing essential letter. It intends to support International students by requesting concerned authority not to quarantine in the boarders in this pandemic time.

Conducting exams and calling national and international external examiner for PG, DM/MCH is other challenge. Yearly promotion without annual exam of other UG students now for the time being that will be conducted later is also under consideration. We can’t use currently available technologies such as videos, podcasts, simple virtual reality and simulations, for online exam because of current notice from Nepal Medical Council regarding physical presence during practical exam. We have 18 MBBS and 8 BDS interns at present under the planning for district posting. During this lockdown and pandemic, Fournier electives and clerkship have been affected. It is the right time for faculty, students, and administrators to learn from this critical situation and to overcome these challenges.

Research activities and BPKIHS during COVID-19 pandemic

BPKIHS has been a pioneer in the field of research, patient care and education in Nepal. One third of the biomedical research in the country is reported to be contributed by BPKIHS. During COVID-19 pandemic, all of the daily routine of the institute has been seriously affected. Most of administrative and academic activities were halted and hospital was providing only emergency care. It was not just because of the fear of pandemic but also to better prepare for the fight against the pandemic. At the mean time, it was a challenge to continue ongoing research activities at the institute in
such a pandemic time. Since there are many issues related to current pandemic to investigate into, we have added responsibility to encourage new projects mainly about COVID-19. Institutional Review Committee (IRC), BPKIHS is Nepal Health Research Council (NHRC) affiliated institute body for reviewing research projects in our institute. The IRC started getting new research proposals in pandemic lockdown period for ethical approval. Some of them were COVID-19 related proposals. We had a challenge to expedite the review of COVID-19 related research so that the researchers could start their research in time. As offices were closed, proposal could not be submitted to the IRC, office and hard copy of the research proposal could not be sent to the concerned reviewer to maintain the social distance. At the same time, it would be a lengthy process to register the proposal, allocate the reviewer and send the hard copy to the reviewer.

Considering the current state, the IRC sent a notice to all the faculties and students to submit the electronic copy of proposal to be reviewed. We received more than 10 COVID-19 related and 30 other research proposals in this 2 months time. We sent all the proposals in the email and ask the reviewers to review electronically and they did co-operate in our endeavor. After we received modifications suggested by the reviewers, we compiled it and sent it via the mail. It was found that most of the review process which used to take 2-3 months, now being completed in 2-3 weeks. Finally, dream came true for the IRC as we have long been planning to shift to electronic and paperless review system from conventional review process. This Pandemic has come as a blessing in disguise for the IRC, BPKIHS. We hope there will be a paradigm shift in human behavior and work culture due to this pandemic. Last but not the least a positive note for this pandemic, 'Everything happens for good.'

Managerial aspect of COVID-19 pandemic at BPKIHS

This Institute has been leveled as level III COVID-19 Hospital by the Government of Nepal and runs a well-equipped SARS-CoV RT-PCR testing laboratory. It has been major referral center for testing COVID-19 samples and treating positive patients. This ray of hope in Eastern part of Nepal is one of the centers of excellence in this endeavor.

BPKIHS has prepared to face this pandemic crisis in many possible ways. This multi-disciplinary Medical Institute has been continuing its core activities, like: providing multi-disciplinary services through OPD, In-patients, help-line, Tele-Medicine, online academic activities for undergraduate and post graduate students and many COVID-19 related researches have been approved by the IRC/ Institutional Ethical Review Board (IERB) even in this crisis time.

This Institute has been serving the nation and mankind in different dimensions of health care system since its inception and in this pandemic crisis, it has prepared to become a forerunner in providing health care services, including diagnostic entity along with training of human resources working in COVID-19 laboratory of other provinces. BPKIHS has established following pillars to face this pandemic crisis apart from aforementioned activities:

- **COVID-19 Safety assessment of health facilities- Structural, Non-Structural and Functional:** A 100-bedded level III COVID-19 Hospital has been upgraded in the preexisting Rehabilitation center. This
hospital has all the facilities like ICU/ OT/ Labour Room/ Emergency/ Laboratory and other diagnostic entity.

- **Hospital preparedness and readiness for response to deal with mass positive cases and management:** The paying ward including other departments of the Institute has been converted in the service of PCR positive asymptomatic cases as an isolation ward with the capacity of about 100 beds and if the demand prevails, 100 more patients will be accommodated in the separate block.

- **Strengthening satellite hospitals’ network, communication and referral linkages:** BPKIHS has been linked with 14 districts of Province-1 and 3 districts of Province-2 through health care system and District Health Office. This is expected to reduce the problems in sending doctors to the needy place, managing/ referring patients as well as to enhance diagnostic support. In this digital world, BPKIHS has been linked up with districts and different places, namely: Pyauli in Bhojpur; Siduwa, Patle and Danda Bazar in Dhankutta; Rampur in Udaypur and Fikkal in Ilam for e-learning, capacity building and enhancing health care system of the local place through Primary Health Care center. Since the emergence of COVID-19, telemedicine service has been further extended to Belbari, Letang, Sundar Haraicha and Pathari of Morang districts of Province-1. This is largely to render effective service at the community level.

- **Emergency response plans:** A Rapid Response Team (RRT) lead by Vice Chancellor, BPKIHS is in operation since the emergence of the crisis. This team is primarily responsible to formulate and guide BPKIHS to deal with COVID-19 issues.

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