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PERSPECTIVE **CORONA EXPERIENCE**

The challenge of COVID–19 pandemic: a standpoint from a lower middle-income country

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Summary

The current COVID–19 pandemic has posed a significant challenge not only to the developing countries but also to the rich and developed world. With a lack of well-developed healthcare system in the developing countries, the spread of COVID–19 can lead to catastrophic consequences. Patients suffering from this viral disease usually require well–equipped intensive care units. However, in most of the underdeveloped countries, there exists a substantial gap between demand and availability of specialized beds and facilities in the intensive care units, including monitors, ventilators, trained staff, and personal protective equipment. Coordinated efforts are required to overcome these problems. Here we mention few strategies in resource limiting critical care settings base upon our experience.

Key words: COVID–19 pandemic; COVID–19; Telemedicine; ICU; Lower middle-income countries (LMIC);

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1. Introduction

Viral diseases continue to remain a serious threat to the public health, according to the World Health Organization (WHO). Recent outbreak of virus induced unexplained respiratory infection was first detected in Wuhan (China) and reported to the WHO on December 31, 2019. It then spread to most of the other countries and was declared a global emergency. More than 199 million cases and around 4 million deaths occurred worldwide. The etiology of this ongoing pandemic is attributed to a virus belonging to corona virus family (SARS-CoV-2), and was named by WHO as Coronavirus Disease of 2019 (COVID–19).[1] In its more severe forms, the patients develop pneumonia needing mechanical ventilation. The available data so far shows at least 5 to 16% of patients require intensive care unit (ICU) admission.[2] The number of critically ill patients would quickly overwhelm total ICU capacity.The corona virus was confirmed to have reached Pakistan in February 2020. Up-till now number of confirmed cases in the country has been exceeded over one million, with more than 28000 deaths.[3] Unfortunately, suspected cases are far more than the confirmed ones and were increasing at the time of writing this paper.

Currently, our country is drifting away from the fourth wave of COVID–19. Mostly cases of this wave had the virus of B.1.617.2 (delta) variant. It contributed to a surge in cases in India and was reported across the globe. It's uncertain how effective the BNT162b2 and ChAdOx1nCoV-19 vaccines are against this mutation.[4]

1.1. Analyze current health-care capacity and prepare for a surge:

Pakistan is a country with an estimated population of 20.7 million in 2017.[5] According to official data; there

were only 127,859 trained doctors and 12,804 health facilities, and a chronic skills deficiency in our country.[6] The healthcare facilities differ drastically in urban and rural areas. The access to tertiary healthcare facilities is minimal to nonexistent in the rural areas. With more than 60% population living in the rural areas, it could have lead to a catastrophic situation.

As far as Pakistan is concerned, if we took 0.1% of population get infected over the next couple of months, and 5% of all infected need critical care, we might need about 11000 ICU beds. Leading to approximately 165000 ventilator days if taken roughly the average duration of mechanical ventilation is up to 15 days.

Similarly, the country's capacity for intensive care, particularly in the public health system, is extremely restricted.[7] Currently, we have 220 teaching hospitals with less than 2000 ICU beds with or without ventilators, hence one can understand the gravity of the situation. Even if the ventilators could be found/purchased, the required staffing would remain as a major obstacle.

2. Management strategies

2.1. COVID ICU:

Looking at the virulence of COVID–19, to prevent the transmission of infection, care for non-COVID and COVID patients must be separated.[8] To transform acute care wards to COVID wards, we require well-equipped facilities including multi-parameter monitors, pulse oximeters, high flow nasal cannula, non-invasive ventilators, ventilators, and infusion pumps etc. Above all a dependable high-pressure oxygen source is also required.

2.2. Triage:

Whenever the number of cases are steadily rising, we must expect to face scenarios where the number of critically ill patients will outrun the available health-care resources (personnel, PPEs, ventilators, and oxygen supplies etc.). During this worst-case scenario, new standards of care and thresholds for ICU admissions would be needed. There are no unanimous guidelines as to how to allocate limited healthcare resource amongst all those who need it, and it remains to be decided by the local healthcare authorities.

A recent guideline by Emanuel et al.[9] elaborates some basic principles, such as, prioritize health workers, maximize the benefits, be responsive to evidence, provide priority care, distinguish research participation, and apply the same principles to care to non–COVID–19 and COVID–19 patients. They also emphasize that all actions be mindful of helping to ‘save the most lives’ and giving priority to the sickest and the youngest. It means that it may be justifiable to give priority to patients who are clearly very sick from COVID–19, have a reasonable chance of surviving with timely and aggressive care and who then have a reasonable life-expectancy after surviving their acute illness. Therefore, we should formulate our recommendations based upon the above principles.

2.3. Tele-ICU:

Telemedicine is the use of electronic telecommunications to transfer medical info from one location to another in order to enhance a patient's clinical health state. A tele-intensive care unit (tele-ICU) employs telemedicine in the ICU, allowing off-site clinical resources to help in providing care for critically sick patients. When established and implemented in hospitals, tele-ICUs may be helpful in lowering expenses, reducing ICU length of stay, reducing medication errors, and improving patient safety.[10]

Telehealth has also been proven successful and effective in other countries like Brazil, India, Philippines, and Nigeria during the COVID–19 pandemic. Beyond the COVID–19 pandemic, telehealth at scale has the potential to dramatically increase health equity, particularly in nations with limited primary healthcare coverage, because it can improve accessibility for individuals with geographic or disability-related problems.

Unfortunately, in the current crisis we cannot expect that the available intensivists can meet the increased needs of the country. To overcome this shortage telemedicine is a good alternative. As the one of the largest tertiary care institute of the country, the Aga Khan University Hospital has taken the initiative and worked with Pakistan's health ministry to offer a variety of trainings, tele-consultations, and assessments of ICU facilities around the country to support care for the COVID–19 patients who are hospitalized. A similar scenario is seen at Lady Reading Hospital Peshawar, where leading Pakistani intensivists currently serving abroad, offer their services on rotation, including online daily rounds and occasional consultations.

2.4. Train physicians, nurses, and paramedical staff:

Healthcare providers (HCP) must be trained, with a particular focus on COVID–19. We have conducted remote classes and live webinars to rapidly expand the cadre of healthcare workers, who work on front-line with an understanding of the specialized needs and management of ICU patients. These courses included relevant topics such as infection control, biosafety, and rational use of antibiotics. Furthermore, we have

provided advanced training utilizing online simulation based and live case-based learning and mentoring sessions to develop specialized capacity in selected centers.

2.5. Personal Protective Equipment (PPE):

Protection of HCP must be number one priority at this critical point. It is imperative that appropriate PPEs are available for routine care, particularly for aerosol producing procedures performed in COVID–19 unit. We must have provider-specific fit-tested N95 respirators or powered air purifying respirator devices, face-shields, gowns, and double gloves). The staff must have training of donning and doffing PPE.[11]

Our institution strictly follows the guidelines of donning and doffing of PPE during the care of COVID–19 patients and we also enforced to wear PPE during endo-tracheal intubation while conducting anesthesia for surgical procedures.

2.6. Care of healthcare providers:

In this ongoing pandemic, healthcare workers are on the front lines and they are vulnerable of becoming infected and being ill.[12] It is essential that each institution develops proper treatment facilities including their vaccination on priority basis. It is equally important to keep them engaged with high morale. HCP who care for the infected people might experience a conflict between their professional obligations and their responsibilities to their families. There should be a mechanism in place to deal with such situations, including professional assistance and their rotation to other areas or work with reduced duty hours.

Care of HCP exposed to COVID–19 patients run the risk of becoming asymptomatic carriers and carrying the virus home to elderly parents and loved ones. HCPs taking specific care of confirmed or suspected COVID–19 patients should have self-quarantine provision in the hospital (including residential or student dorms etc.)

2.7. Ethical Considerations:

The teams–in–charge of screening and triage, ICUs, and laboratories might be under a lot of pressure to complete the tests, admit patients to ICUs, and provide ventilatory support, among other things. Similarly, there may be some disagreement regarding whether to initiate or stop life support for severely ill patients, particularly those who are very old or have several comorbidities. Because a treatment team may not be able to make choices on these sensitive matters on its own, an eminent committee made up of people who are not directly involved in patientcare must be constituted.[13]

2.8. Role of regional societies:

The rapidly changing health scenario worldwide has led to identifying the role of non-state actors in combating this pandemic. There is a need for enhanced role of regional societies along with WHO and the state especially in the developing world. Strong coordination is needed between these societies and the government to address the pressing national challenges and building resilient health systems. They need to sit together to make national action plan to counteract such pandemic in resource limited settings.[14]

2.9. Role of National Command and Operation Centre (NCOC):

The National Command and Operation Center (NCOC) is the main authority responsible for Pakistan's national COVID 19 effort's, policies and implementation. It was established in April 2020 to collect, analyze, and process data from the state's different territories. It also makes suggestions to the National Coordination Committee (NCC) for timely interventions in the COVID–19 response effort across the country. The major tasks of NCOC are collecting the data and its interpretation, public messaging, and education of the masses regarding the pandemic and coherent governance and policy recommendations to ensure consistency and predictability in the national response and procuring vaccines and other relevant drugs and conducting a mass vaccination campaign. The government of Pakistan has also integrated all data regarding positive cases and vaccination record with National Database and Registration Authority (NADRA).

2.10. Religious leaders' engagement:

In this Muslim-majority country, conspiracy theories about the vaccines abound. According to a Gallup Pakistan[15] research, even if the vaccine is being supplied free of charge, 49% of the population is hesitant to get vaccinated.

There are certain myths and misinformation existing too. Many people in the country still refuse to believe that the pandemic does exist. There are also rumors that the Western powers aim to use vaccines to implant a 'surveillance microchip' in the human bodies.

Government of Pakistan has involved religious scholars, as it did before to promote polio vaccination, when vaccine campaign was hampered by a conspiracy theory stating that the vaccines were pig-derived goods, which are banned in Islam.[16] Because the majority of Pakistanis value Islamic scholars' advice, the Pakistani government has enlisted religious leaders' help in raising awareness of the Corona virus's risk, emphasizing the importance of hand washing, mask use, and physical separation, as well as

Table 1: Vaccines registered in Pakistan by the Drug Regulatory Authority (DRAP)

Name of vaccine	Country of origin	Doses required
Sinopharm	China National Pharmaceutical Group, China	2
CanSinoBio	CanSino Biologics Inc. China	1
CoronaVac	Sinovac. China	2
Covishield or Vaxzevria	AstraZenaca. UK	2
Comirnaty	Pfizer BioNTech. USA	2
Sputnik V	Gam-COVID-Vac. Russia	2
Spikevax	Moderna. USA	2

persuading other religious leaders to increase risk perception. Religious leaders use the information provided at least once a week to speak to their congregations during Friday sermons and to make announcements in mosques with important COVID–19 prevention lessons.

2.11. Mass Vaccination:

The COVID–19 vaccination campaign started in February 2021 in Pakistan. The vaccination has been carried out in a phased manner with priority first given to frontline HCW, senior citizens to people in lower age brackets. Starting from May 2021, the vaccination registration has now been opened for above 18 years old; hence, the entire population over 18 years can now get registered and hence vaccinated, provided that the supply chain is maintained.

On 24th May 2021, Pakistan announced the production of homemade COVID–19 vaccine 'PakVac' through China's single-dose COVID–19 vaccine CanSino at National Institute of Health (NIH). This facility will produce 3 million doses/month and as a result will significantly reduce Pakistan's dependence on importing vaccine from other countries and in maintaining vaccine supply line.

The vaccines registered in Pakistan by the Drug Regulatory Authority (DRAP) and received in-country are mentioned in Table 1.

3. COVAX updates

Pakistan received 1st trench of shipment of AstraZeneca vaccines in May 2021 through COVAX. Pfizer BioNTech® vaccines (100,620 doses) were also delivered to Pakistan with diluents and delivery of syringes in May 2021.

By now Pakistan has successfully administered more than 30 million doses of COVID vaccines. It is assumed that every person requires two doses, so till now we have vaccinated only about 27.3% of the country's population.[17]

4. Conclusion

COVID has brought unprecedented times to us. We need to plan and act rapidly and logically to curb the deadly virus. The surges in the infected cases, if not controlled, could play havoc in low to low-medium income countries like Pakistan. A rational use of the existing resources, a strong focus on the safety of the healthcare personnel as well as their training, and an aggressive vaccine campaign at national level, will be pivotal to provide supportive care to the patients and prevent the healthy population from the disease.

5. Conflict of interests

The authors declare that they have no conflict of interests.

6. Authors' contribution

MAA: Preparation of the first draft

KMS: Preparation and edited the final draft

All authors contributed to the concept agree to the final version of the manuscript.

7. References

1. Cascella M, Rajnik M, Aleem A, Scott C. Dulebohn; Raffaela Di Napoli. Features, Evaluation, and Treatment of Coronavirus (COVID-19) [Updated 2021 Apr 20]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021. Available from: https://www.ncbi.nlm.nih.gov/books/NBK554776/
2. Grasselli G, Pesenti A, Cecconi M. Critical care utilization for the covid-19 outbreak in Lombardy, Italy: early experience and forecast during an emergency response. JAMA. 2020;323(16):1545–1546. [PubMed] DOI: 10.1001/jama.2020.4031
3. COVID-19 Health Advisory Platform by Ministry of National Health Services Regulations and Coordination. Available from: https://covid.gov.pk/stats/pakistan (Accessed 2 September 2021)
4. European Centre for Disease Prevention and Control. Threat assessment brief: emergence of SARS-CoV-2 B.1.617 variants in India and situation in the EU/EEA. Available from: https://www.ecdc.europa.eu/en/publications-data/threat-assessment-emergence-sars-cov-2-b1617-variants (Accessed 11 May 2021)

5. Pakistan Bureau of Statistics. Available from: http://www.pbs.gov.pk/content/population-census (Accessed 30 June 2021)
6. Kurji Z, Premani ZS, Mithani Y. Analysis of the health care system of Pakistan: Lessons learnt and way forward. J Ayub Med Coll Abbottabad. 2016;28(3):601-604. [PubMed]
7. Hashmi M, Taqi A, Memon MI, Ali SM, Khaskheli S, Sheharyar M, et al. A national survey of critical care services in hospitals accredited for training in a lower-middle income country: Pakistan. J Crit Care. 2020;60:273-278. [PubMed] DOI: 10.1016/j.jcrc.2020.08.017
8. Hick JL, Biddinger PD. Novel coronavirus and old lessons preparing the health system for the pandemic. N Engl J Med. 2020;382:e55. [PubMed] DOI: 10.1056/NEJMp2005118
9. Emanuel EJ, Persad G, Upshur R, Thome B, Parker M, Glickman A, et al. Fair allocation of scarce medical resources in the time of covid-19. N Engl J Med. 2020;382:2049-2055. [PubMed] DOI: 10.1056/NEJMsb2005114
10. Coustasse A, Deslich S, Bailey D, Hairston A, Paul D. A business case for tele-intensive care units. Perm J. 2014;18(4):76–84. [PubMed] DOI: 10.7812/TPP/14-004
11. Saran S, Gurjar M, Baronia AK, Lohiya A, Azim A, Poddar B, et al. Personal protective equipment during COVID-19 pandemic: a narrative review on technical aspects. Expert Rev Med Devices. 2020;17(12):1265-1276. [PubMed] DOI: 10.1080/17434440.2020.1852079
12. Sandesh R, Shahid W, Dev K, Mandhan N, Shankar P, Shaikh A, et al. Impact of covid-19 on the mental health of healthcare professionals in Pakistan. Cureus. 2020;12(7):e8974. [PubMed] DOI: 10.7759/cureus.8974
13. Sese D, Ahmad MU, Rajendram P. Ethical considerations during the COVID-19 pandemic. Cleve Clin J Med. 2020. [PubMed] DOI: 10.3949/ccjm.87a.ccc038
14. Amaya AB, De Lombaerde P. Regional cooperation is essential to combatting health emergencies in the Global South. Global Health. 2021 Jan 9;17(1):9. [PubMed] DOI: 10.1186/s12992-021-00659-7
15. Coronavirus Attitude Tracker Survey Wave 9. Available from: https://gallup.com.pk/post/31420
16. Khan TM, Chiau LM. Polio vaccination in Pakistan: by force or by volition? Lancet. 2015 Oct 31;386(10005):1733. [PubMed] DOI: 10.1016/S0140-6736(15)00689-3
17. NCOC Government of Pakistan. Available from: https://ncoc.gov.pk/covid-vaccination-en.php. (Accessed 30 June 2021)