DERLEME REVIEW

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A Review of Clinical Management Practice of COVID-19 in South Asian Countries: Systematic Review

Güney Asya Ülkelerinde COVID-19 İçin Klinik Yönetim Uygulamalarının Gözden Geçirilmesi: Sistematik Derleme

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ABSTRACT Our world is currently fighting with highly infectious and deadly severe acute respiratory syndrome-coronavirus-2 virus which has no specific remedy yet. No study focused on reviewing applied clinical management and treatment protocol of coronavirus disease-2019 (COVID-19) by health ministry of different nations till date. Therefore, this study focuses to identify and compare clinical management and treatment protocol guidelines for COVID-19 from 8 South Asian countries. This study will assist the healthcare workers and authorities of different nations by sharing the key information from potential guidelines to treat COVID-19 patients. Necessary information has been collected from the clinical management guidelines for COVID-19 in Health Ministry website of India, Bangladesh, Sri Lanka, Pakistan, Afghanistan, Nepal, Bhutan, and Maldives. Though clinical management practices vary from country to country, all of these countries are utilizing high flow oxygen therapy and mechanical ventilation for critical cases. Moreover, some potential drugs have been suggested for treatment by most of the countries but were not recommended yet as all of them are under clinical trials. Hydroxychloroquine has been suggested by most of these countries. All the countries are developing and updating their guidelines for clinical management of COVID-19 patients. It is worth mentioning that the recovery rate of Bangladesh, India, Sri Lanka, Pakistan, Afghanistan, Nepal, Bhutan, and Maldives is 63.52%, 76.24%, 94.88%, 94.47%, 83.65%, 71.5%, 71.14%, and 83.83% respectively. The oxygen therapy and empirical antibiotic for preventing secondary infection have been used commonly in most of these countries as an effective treatment.

Keywords: Guideline; drugs; vaccine; treatment; management

ÖZET Dünyamız halen henüz özel bir ilacı bulunmayan, oldukça enfeksiyöz ve öldürücü olan ağır akut solunum sendromkoronavirüs-2 virüsü ile savaşmaktadır. Bugüne kadar koronavirüs hastalığı-2019 (COVID-19) için faklı ulusların sağlık bakanlıklarının uyguladığı klinik yönetim ve tedavi protokollerinin gözden geçirilmesine odaklanan herhangi bir çalışma yapılmamıştır. Bu nedenle, bu çalışmada 8 Güney Asya ülkesinin klinik yönetim ve tedavi protokolleri rehberlerini tanımaya ve karşılaştırmaya odaklanılmıştır. Bu çalışma COVID-19 hastalarının tedavisi için kılavuzlardaki anahtar noktaları paylaşmak suretiyle farklı ulusların sağlık çalışanlarına ve otoritelerine yardımcı olacaktır. Gerekli bilgiler Hindistan, Bangladeş, Sri Lanka, Pakistan, Afganistan, Nepal, Bhutan ve Maldivler'in sağlık bakanlığı web sitelerinde COVID-19 için klinik yönetim kılavuzlarından toplanmıştır. Klinik yönetim uygulamaları ülkeden ülkeye değişmekle birlikte bu ülkelerin hepsinde kritik olgularda yüksek akımlı oksijen tedavisi ve mekanik ventilasyon kullanılmaktadır. Dahası, çoğu ülkede tedavi için bazı potansiyel ilaçlar öne sürülmüştür fakat henüz önerilmemiştir çünkü hepsinin klinik çalışmaları sürmektedir. Bu ülkelerin çoğunda hidroksiklorokin önerilmiştir. Tüm ülkeler COVID-19'un klinik yönetimi için rehberlerini geliştirmekte ve güncellemektedir. Bangladeş, Hindistan, Sri Lanka, Pakistan, Afganistan, Nepal, Bhutan ve Maldivler'de iyileşme oranlarının sırasıyla %63,52, %76,24, %94,88, %94,47, %83,65, %71,5, %71,14 ve %83,83 olduğunu söylemeliyiz. Bu ülkelerin çoğunda etkili bir tedavi olarak oksijen tedavisi ve sekonder enfeksiyonların önlenmesi için ampirik antibiyotik tedavisi yaygın olarak kullanılmıştır.

Anahtar Kelimeler: Rehber; ilaçlar; aşı; tedavi; yönetim

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Coronavirus disease-2019 (COVID-19) is a dangerous disease which was first detected in China in December 2019.[1] Till now, the disease has been spread all over the world. Around 33,10,234 confirmed cases have been reported in India till 27 August, 2020. Among them, 25,84,243 cases have received an outcome where, 2.35% death and 97.65% recovered/discharged have been identified.[2] If we consider total confirmed cases of India, then, 1.83% death and 76.24% cured can be identified.[2] That means 21.93% cases are still active.[2] Delhi, Uttar Pradesh, Karnataka, Andhra Pradesh, Tamil Nadu, and Maharashtra are 6 highly affected states.[2] The highest number of confirmed cases (21.71% comparing with the whole country) have been identified in Maharashtra and among the confirmed cases, 24.1% are still active, 72.69% recovered and 3.21% died.[2] Moreover, the second highest number of confirmed cases (11.82% in comparison to the whole country) have been recorded in Tamil Nadu and among the confirmed cases, 13.18% are still active, 85.1% recovered and 1.72% died.[2] Around 3,04,583 confirmed cases have been reported in Bangladesh till 27 August, 2020. Among them, 1,97,585 cases have received an outcome where 2.09% death and 97.91% recovered/discharged have been identified.[3] If we consider total confirmed cases of Bangladesh, then, 1.35% death and 63.52% cured can be identified.[3] That means 35.13% cases are still active.[3] The highest number of confirmed cases (38.8% comparing with the whole country) have been found in Dhaka division and all other divisions have 61.2% confirmed cases.[4] Moreover, the second highest number of confirmed cases (13.72% in comparison to the whole country) have been reported in Chattogram.[4] Around 2,94,638 confirmed cases have been reported in Pakistan till 27 August, 2020. Among them, 2,85,835 cases have received an outcome where, 2.19% death and 97.81% recovered/discharged have been identified.[5] If we consider total confirmed cases of Pakistan, then, 2.13% death and 94.88% cured can be identified.[5] That means 2.99% cases are still active.[5] Sindh and Punjab are 2 highly affected provinces.[5] The highest number of confirmed cases (43.74% comparing with the whole country) have been identified in Sindh and among the confirmed cases, 3.06% are still active, 95.09% recovered and 1.85% died.[5] Additionally, the second highest number of confirmed cases (32.77% in comparison to the whole country) have been reported in Punjab and among the confirmed cases, 2.02% are still active, 95.7% recovered and 2.27% died.[5] Around 2,984 confirmed cases have been reported in Sri Lanka till 27 August, 2020. Among them, 2,831 cases have received an outcome where 0.42%, death and 99.58% recovered/discharged have been identified.[6] If we consider total confirmed cases of Sri Lanka, then, 0.4% death and 94.47% cured can be identified.[6] That means 5.13% cases are still active.[6] Almost 38,855 confirmed cases have been found in Afghanistan till 17 September, 2020. Among them, 33,939 cases have received an outcome, where 4.23% death and 95.77% recovered/discharged have been identified.[7] If we consider total confirmed cases of Afghanistan, then, 3.7% death and 83.65% cured can be identified.[7] That means 12.65% cases are still active.[7] Furthermore, around 58,327 confirmed cases have been found in Nepal till 17 September, 2020. Among them, 41,706 cases have received an outcome, where 0.9% death and 99.1% recovered/discharged have been identified.[8] If we consider total confirmed cases of Nepal, then, 0.65% death and 71.5% cured can be identified.[8] That means 27.85% cases are still active.[8] Meanwhile, only 246 confirmed cases have been found in Bhutan till 17 September, 2020. Among them, 175 cases have received an outcome, where no death and 100% recovered/discharged have been identified.[9] If we consider total confirmed cases of Bhutan, then, 0% death and 71.14% cured can be identified.[9] That means 28.86% cases are still active.[9] Besides, around 9,427 confirmed cases have been found in Maldives till 17 September, 2020. Among them, 7,936 cases have received an outcome, where 0.42% death and 99.58% recovered/discharged have been identified.[10] If we consider total confirmed cases of Afghanistan, then, 0.35% death and 83.83% cured can be identified.[10] That means 16.53% cases are still active.[10]

The principal objective of this paper is to analyze and compare nation-wide clinical management practices and treatment protocol in 8 infected countries from south Asia. Till now, no review works have been found that discussed clinical management and treatment protocol of COVID-19 focusing on gov-

ernment-provided guidelines of different south Asian nations, which will be fulfilled by this review work. This study focused on 8 neighboring countries which have similar climate and similar health behavior among their people, therefore this study will be able to assist the clinical management and treatment protocol of these countries by sharing their clinical management guidelines and treatment protocol based on the clinical status of patients. Moreover, other neighboring countries which are not badly affected yet by COVID-19 infection can also be assisted by this study to prepare their clinical management and treatment protocol to secure their future situation.

MATERIAL AND METHODS

A search string has been conducted through Google for Health Ministry and regional government medical association website of 8 countries from south Asia to identify the clinical management guideline of COVID-19 of those countries, which they provided healthcare workers. From the published database of Health Ministry/medical association websites, guideline books which stated the clinical management and treatment of COVID-19 are selected for this study. The recommended therapeutics, drugs and supportive care from these identified books are also described.

RESULTS

After conducing search string through the website of Health Ministry and regional government medical association, details and proper clinical management guidelines with possible treatment and diseases categories were identified for 4 countries, India, Bangladesh, Sri Lanka and Pakistan while others stated about quarantine, nutrition, personal protective equipment (PPE) and case identification. However, the stated clinical management of COVID-19 in guideline book for 8 countries are summarized as follows.

CLINICAL MANAGEMENT OF COVID-19 IN INDIA[11]

The section is designed based on Revised Guidelines on Clinical Management of COVID-19 (Government of India Ministry of Health & Family Welfare Directorate General of Health Services, EMR Division, 2020). Management of patients of India with COVID-19 cases reported or COVID-19 probable cases are shown in Table 1.

CLINICAL MANAGEMENT OF COVID-19 IN BANGLADESH[12]

This part is summarized based on COVID-19 infection's Treatment Protocol in Bangladesh (Directorate General of Health Services Ministry of Health and Family Welfare Bangladesh, April 2020).

Pharmacological and Supportive Treatment

- The location of treatment will be decided by the severity of the illness.
- Infections that have been suspected or proven should be isolated and treated in specially designated hospitals that have adequate isolation, protection, and preventive measures in place. A minor case may be handled in a separate room with no other patients. Moderate & severe cases should be treated in COVID-19 hospital.
- Patients in critical condition must be admitted to the intensive care unit as soon as feasible.

General Management

- Treatment consists of bed rest and muscle strengthening.
- Obtaining an adequate calorie intake.
- Maintaining the balance of water and electrolytes in the body to preserve the stability of inner environment.
- Pulse rate and oxygen saturation should be monitored.
- Providing effective oxygen treatment on a timely basis.
- Management of patients of Bangladesh with COVID-19 cases reported or COVID-19 probable cases are shown in Table 2.

CLINICAL MANAGEMENT OF COVID-19 IN SRI LANKA[13]

This section is designed based on Provisional Clinical Guidelines on COVID-19 of Sri Lanka (Sri Lanka Medical Association, 2020). Management of patients of Sri Lanka with COVID-19 cases reported or COVID-19 probable cases are shown in Table 3.

TABLE 1: Management of patients of India with COVID-19 cases reported or COVID-19 probable cases.[12]

Case types	Treatment type
Supportive treatment and surveillance in the early stages	- "Supplemental oxygen therapy" should be provided instantly to patients with shock, hypoxaemia, or respiratory distress and severe acute respiratory infections. Titrate flow rates for reaching target SpO2 should be greater than or equal to 92-95 percent in adults who are pregnant and 90 percent in adults who are non-pregnant. Children who have emergency signs (shock, central cyanosis, severe respiratory distress, obstruction or absence of breathing, convulsions or coma) can be provided "oxygen therapy" during resuscitation. In this case, the target SpO2 should be greater than or equal to 94 percent. In all other cases, the target SpO2 should be 90 percent. - For patients with severe acute respiratory infections, if no evidence is present related to shock, utilization of conservative type of fluid administration can be suggested in case of patients. It is also necessary to treat such patients with intravenous fluids, as oxygenation may be worsened by aggressive fluid resuscitation. - "Systemic corticosteroids" should not be provided routinely in order to treat acute respiratory distress syndrome or viral pneumonia outside of the trial if they are not indicated for any other reason: Neither survival benefits nor the possibility of harms has been reported in corticosteroids observational studies, where patients were administrated with severe acute respiratory infections.
Management of acute respiratory distress syndrome and hypoxemic respiratory failure	- Critical "hypoxemic respiratory failure" should be identified whenever "standard oxygen treatment" fails in a patient with "respiratory distress", and hypoxemia or breathing effort may still be increased by patients when the delivery of oxygen is done through a "face mask with a reservoir bag" (minimum flow that is necessary for maintaining inflation of bag is 10-15 L/min and FiO2 should be within 0.60 to 0.95). - If worsening of the condition or no improvement of the condition is observed within one to 2 hours' time duration, it is necessary to utilize "invasive mechanical ventilation" and "tracheal intubation" at the right time. Utilizing high-flow nasal oxygen can reduce the necessity of intubation in comparison to "standard oxygen therapy". - The patient should not be disconnected from the ventilator because it may create loss of atelectasis and positive end-expiratory pressure.
Septic shock management	- Septic shock should be recognized in adults in case of the confirm or suspected infection and vasopressors are necessary for maintaining mean arterial pressure greater than or equal to 65 mmHg and lactate should be less than 2 mmol/L whenever hypovolemia is absent. - Vasopressors should be administered when persistence shock is observed after or during the "fluid resuscitation." The preliminary target of blood pressure should be mean arterial pressure greater than or equal to 65 mmHg in the case of adults and "age-appropriate targets" of children. - In the case of the unavailability of "central venous catheters", it is possible to provide vasopressors via a "peripheral intravenous". However, close monitoring and utilization of a "large vein" are required in order to get signs of "local tissue necrosis" and "extravasation".
Other therapeutic measures	- Whenever oxygenation indicators are progressively deteriorated for patients, the utilization of glucocorticoids can be done for 3 to 5 days. Moreover, the dose should not be exceeded otherwise severe acute respiratory syndrome-coronavirus-2 clearance will be delayed because of immunosuppressive effects. For critical and severe pregnant cases, termination of pregnancy is preferred. Based on the mother's condition, it is necessary to consult with specialists of intensive care, neonatal, and obstetric. Fear and anxiety are often observed in patients and psychological counseling is required to support them.

CLINICAL MANAGEMENT OF COVID-19 IN PAKISTAN[14]

This section is summarized based on Clinical Management Guidelines for COVID-19 Infections of Pakistan (Ministry of National Health Services, Regulations and Coordination, 2020). Management of patients of Pakistan with COVID-19 cases reported or COVID-19 probable cases are shown in Table 4.

CLINICAL MANAGEMENT OF COVID-19 IN AFGHANISTAN[15]

This section is written based on Clinical Management Guidelines for COVID-19 Infections of Afghanistan (Ministry of Public Health, 2020). The clinical management of COVID-19 infected patients and their treatment protocol were not ad-

TABLE 2: Management of patients of Bangladesh with COVID-19 cases reported or COVID-19 probable cases.[12]

Case types	Stage category	Treatment type
Mild cases	Patient with no symptoms	Hydroxychloroquine with supportive treatment plus isolation regimen Ward for patients who have been placed in isolation. - Than 30 mL/min. - Keep a careful eye on everything.
	Symptomatic patients	- If the temperature is higher than 38.9 °C, 1 tablet of paracetamol (500 mg) have to be taken. - The daily dosage of unfractionated heparin/enoxaparin is 1 mg and it should be adjusted if the creatinine clearance is less than 30 mL/min. - Keep a careful eye on everything.
Moderate case	Treatment protocol for symptomatic mild case plus	- If necessary, oxygen may be delivered via a nasal canula at a rate of 2 L/min (with a maximum flow rate of 6 L/min). - On day one, 1,600 mg of tab favipiravir should be taken, which should be 600 mg BID on days 2 through 10. - To treat moderate to severe cases needing oxygen supplementation, it is necessary to provide 200 mg intravenous daily for 5 days. - Standing in a prone posture for at least 4-6 hours each day is recommended.
	Patients in a hospital ward or isolation room are considered to be	- Avoid nebulizers and other sophisticated respiratory treatments if at all possible. If necessary, use metered-dose inhaler in conjunction with volume spacers. - Bagging is strictly prohibited. - Non-invasive ventilation should be avoided. - Transfer to the intensive care unit as soon as possible if respiratory signs or symptoms worsen.
Severe cases	In additional to the protocol for moderate case management (excluding oral steroid)	- Keep fluid burden to a minimum and euvolaemia at a safe level. - Norepinephrine is used early in the treatment of hypotension. - Antibiotics with a broad range of activity-Inj meropenem 1 gm BID. - Take into consideration the cytokine storm/hemophagocytic lymphohistiocytosis image. - If tocilizumab is available, it should be used. - If convalescent plasma treatment is available, it should be used.
	Observation of very ill to critically ill patients (whenever facility is provided)	- Monitoring of blood glucose levels (especially for diabetes mellitus patients and patients on steroids). - Whenever chloroquine/hydroxychloroquine and azithromycin are utilized, it has been suggested to keep an eye on the corrected QT interval, as well as your magnesium levels. - Chest X-ray should be followed. - Patients who develop severe cardiomyopathy/myocarditis should be carefully monitored with echocardiogram.

dressed in available documents. However, the management protocol of malnutrition during COVID was identified which is summarized in below:

Recommended Actions During COVID-19

Treatment of Wasting

During COVID-19 pandemic, malnutrition may increase and there could be an increase in severe acute malnutrition and moderately acute malnutrition cases. The following adaptations to program delivery to minimize transmission among patients with acute malnutrition are vital.

- Adequate and timely prepositioning of therapeutic supplies (including routine medicines).
- Decrease frequency of follow up visits for outpatient integrated management of acute malnutrition services.

TABLE 3: Management of patients of Sri Lanka with COVID-19 cases reported or COVID-19 probable cases.[13]

Case types	Stage category	Treatment type
Mild	Without pneumonia symptoms	- To be treated in an isolation unit. -Continuous monitoring of the heart rate, breathing rate, and oxygen saturation. - Keep an eye out for any signs of degeneration. - Patients at high risk may need more regular monitoring. - The use of antipyretics to treat a fever, as well as supportive treatment.
	With pneumonia symptoms	Patients/suspects from COVID-19 are to be handled on the ward or in the specified location.
	Pneumonia associated with multiorgan failure, sepsis/septic shock, and acute respiratory distress syndrome	- The disease is mild and there is no necessity of supplementary oxygen. - Oxygen therapy is required in the case of moderate disease.
Moderate		- Maintenance of saturation levels more than 94 percent is achieved via the use of supplementary oxygen. Make use of disposable oxygen delivery systems that are only used once (venture devices, simple nasal mask, and nasal prongs). - High flow nasal oxygen-this treatment should be performed with the health care workers wearing personal protective equipment and a N95 mask since it generates aerosols. This operation should only be performed in individuals who are unable to ventilate.

TABLE 4: Management of patients of Pakistan with COVID-19 cases reported or COVID-19 probable cases.[14]

Case types	Treatment type
Mild disease management	Supportive care should only be utilized for treatment in this case. This includes “antihistamines” for rhinorrhea, “oral hydration” for diarrhea, and “acetaminophen” for fever. Theoretical risk can be included with the utilization of angiotensin-converting enzyme inhibitors or nonsteroidal anti-inflammatory drugs in COVID-19. There is a lacking of clinical data about this but no strong recommendation can be made for continuing or avoiding these medications. Currently, no particular treatment, i.e. hydroxychloroquine or chloroquine is recommended in order to manage mild diseases.
Moderate disease management	For controlling intravenous fluids and fever, oxygen therapy along with supportive therapy through “nasal cannula acetaminophen” should be continued if necessary. Antibiotics can be considered for lobar infiltrates, especially when 'white blood cell' count is high. No particular anti-COVID-19 treatment is recommended currently from studies for treating individuals with suspected or proven COVID-19 infection. Any of the following treatments should be started depending upon the best attainable evidence: 1. Chloroquine 500 mg, twice a day for duration of 10 days 2. Hydroxychloroquine sulfate 200 mg, thrice a day for duration of 10 days

■ Consider reducing exposure by shifting to mid-upper arm circumference only for anthropometric measurements and checking for oedema in children.

Inpatient therapeutic feeding should continue with 1.5 m separation between beds and separate isolation areas.

CLINICAL MANAGEMENT OF COVID-19 IN NEPAL[16]

This section is summarized based on Clinical Management Guidelines for COVID-19 Infections of Nepal (The Ministry of Health and Population, 2020).

Medical Guidelines

■ Assuring availability of “reproductive, maternal, newborn, child, and adolescent health ” facilities and maintaining a physical distance from the facility.

■ Early identification and prompt access to health care for pregnant women and newborns who are suffering from various problems.

■ Increasing the accessibility of equipment and supplies required for the provision of “sexual, repro-

ductive, maternal, newborn, child, and adolescent health" services (commodities, drugs, PPE).

CLINICAL MANAGEMENT OF COVID-19 IN BHUTAN[17]

This section is written based on Clinical Management Guidelines for COVID-19 Infections of Bhutan (Ministry of Health, Royal Government of Bhutan, 2020). As guidelines Bhutan addressed the quarantine procedures and advice to health staff which discuss below:

Quarantine Procedures

The following measures shall be enforced:

■ The quarantine facility (QF) will be cordoned off with barricade to restrict the movement of the people in and out of the facility.

■ There shall be a sign board with clear name and instructions to public.

■ Visitors/public shall not be allowed to enter the QF.

■ A minimum of one health staff shall be assigned to the designated facility to provide necessary medical and logistical support. In addition, a minimum of one police officer/constable shall be also assigned to ensure the compliance of the quarantine requirements and provide security.

■ The designated health staff shall monitor the health of the quarantined individuals twice a day through telephone to minimize physical contacts.

Advice to be given by health staff:

■ Do not go out of house and avoid social gathering for 21 days.

■ Stay and sleep in a separate room.

■ Avoid close contact with the visitors.

■ Don't organize any gathering or social events at home.

■ Wear face mask, follow cough etiquette and hand hygiene, and maintain social distance with family members, relatives or colleagues.

Roles and responsibilities of health staff/ assigned officials:

■ Go out of quarantine room.

■ Loiter around unnecessarily.

■ Post false and incorrect information on social media.

■ Litter the surroundings.

■ Damage properties in the facility (where individual room occupant will be held accountable).

■ Transfer food and other items with other through windows.

■ Health staff assigned at the designated QF must remain at the facility for a minimum of 21 days (till the completion of quarantine period and handing over of the facility).

■ Health staff shall:

- Be responsible for the overall management and supervision of the QF (monitor security, fix time for food, tea/snacks, supply of meals and supplies, ensure cleanliness, laundry service and waste disposal).

- Totally refrain from going inside the room/s of the quarantined individual.

- Register and update all the quarantined individuals at the facility and submit a report to the quarantine focal point at the Ministry of Health.

- Maintain physical distancing of more than 1 meter or 3 feet from the quarantined individual at any given point and minimize contacts with the quarantined individual as far as possible.

CLINICAL MANAGEMENT OF COVID-19 IN MALDIVES[18]

This section is summarized based on Clinical Management Guidelines for COVID-19 Infections of Maldives (Ministry of Health, Republic of Maldives, 2020). Initial response at health facilities and PPE management were addressed as guidelines which present as follows:

Initial Response at Health Facility

Identify cases:

■ Patients suffering from a severe acute respiratory illness

■ Patients who are experiencing respiratory or flu-like signs

■ People who came direct contact of a confirmed or suspected COVID-19 patient

■ Residents or travelers who have traveled to or from the COVID-19 impacted region during the previous 14 days.

Preventing the spread of diseases:

■ Medical mask should be provided.

■ Patients should be isolated as soon as possible.

■ Cough should be covered with a tissue and it should be disposed in a trash can.

Protection of health-care worker and close contacts:

■ Health-care workers must wear a gown, gloves, a face shield or goggles, and a medical mask.

■ Specialized equipment should be utilized for patients or the equipment should be thoroughly clean after each use.

■ Hands should be washed often with water and soap.

Calling Health Protection Agency:

■ Contacting 1676 to inform the Health Protection Agency of the situation.

Personal Protective Equipment

According to the Centers for Disease Control and Prevention, several steps must be followed for COVID-19:

■ Extubation and intubation via the endotracheal tube.

■ Suctioning of the respiratory tract.

■ Performing tracheostomy or tracheotomy operations.

■ Utilization of high-speed dental equipment.

DISCUSSION

This review has been designed based on the published clinical management guidelines books for COVID-19 in health ministry/medical association website of India, Bangladesh, Sri Lanka, Pakistan, Afghanistan, Nepal, Bhutan, and Maldives to discuss about the clinical management system and treatment protocol of these eight nations to fight against COVID-19 infection. Our findings show that India provides broad descriptions and guidelines on steps by steps treatment process for different clinical stages of COVID-19. Though majority of these countries included oxygen therapy and mechanical ventilation, India describes more specifically about the use of mechanical ventilation depends on the clinical status of COVID-19 patients wherein Bangladesh and Sri Lanka discouraged mechanical ventilation and to prevent intubation but encouraged high flow oxygen therapy and Pakistan didn't mention a detailed information about the use of mechanical ventilation in their guideline book. Additionally, from these nations, only India stated to understand about the values and preferences of patients regarding life-sustaining interventions in their guideline. However, other countries also provided potential recommendations which help them to fight against COVID-19 infection and achieve high recovery rate. Among the countries, India suggested hydroxychloroquine and combination of hydroxychloroquine and azithromycin for severe disease management of COVID-19 but at the same time, they also suggested appropriate monitoring and medical supervision due to the possible side effects. On the other hand, Bangladesh suggested hydroxychloroquine for 1st line treatment of mild pneumonia management but Sri Lanka didn't mention to use it. For severe disease management, Bangladesh suggested tocilizumab, high flow oxygen, and methylprednisolone. Pakistan also suggested hydroxychloroquine for mild disease management like Bangladesh. However, Pakistan didn't suggest any specific drug for severe disease management but they are investigating remdesivir, tocilizumab and lopinavir/ritonavir. Sri Lanka has not yet suggested any drug other than oxygen therapy for managing the COVID-19 cases of different categories. Additionally, none of these countries recommended chloroquine in treatment protocols. Recently, the U.S. Food and Drug Administration (FDA) has approved remdesivir (Veklury, Gilead Sciences, USA) for the treatment of COVID-19 in certain situations.[19] Supplemental oxygen and mechanical ventilator support were also recommended for clinical management when needed by FDA. Moreover, World Health Organization (WHO) recommended antipyretics for pain and fever, appropriate rehydration and adequate

nutrition for mild stage.[20] They did not recommend the prophylaxis and antibiotic therapy for mild stage. WHO also recommended oxygen therapy and endotracheal intubation. Therefore, it can be said that, the clinical management and treatment protocol of India, Bangladesh, Pakistan and Sri Lanka are almost similar to the protocol of FAD and WHO.

Meanwhile, Afghanistan focused more on community-based nutrition program, while Nepal focused mostly on immunization. On the other hand, Bhutan focused more on quarantine procedures, and provided guidelines for health staff, whereas Maldives mainly focused on PPE. However, treatment protocol of COVID-19 positive person was not properly addressed by Afghanistan, Bhutan, Nepal and Maldives through health ministry.

LIMITATIONS

Due to the limitation of time, clinical management and recommended treatment of COVID-19 have been analyzed only with eight countries.

CONCLUSION

The study presented the clinical management of COVID-19 in 8 South Asian countries. The clinical management are collected through the health ministry or health association website of respective country. The key findings of these study:

1. The clinical management and treatment protocol of India, Bangladesh, Pakistan and Sri Lanka are properly discussed in guideline among 8 countries.

2. Hydroxychloroquine and combination of hydroxychloroquine and azithromycin for severe disease management were suggested by India.

3. Hydroxychloroquine, tocilizumab, high flow oxygen, and methylprednisolone were suggested by Bangladesh for severe cases.

4. Pakistan suggested hydroxychloroquine for mild disease.

5. Other countries did not provide details on treatment protocol but they discussed nutrition, quarantine protocol, PPE and guidelines for health staff.

There are some similarities and variations among the presented clinical management and treatment protocols. Therefore, this study will assist the healthcare workers and authorities of these countries by sharing the key information from potential guidelines to fight together against COVID-19. Additionally, other nations may also be benefited by following the guidelines discussed in this study.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

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Authorship Contributions

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