

International Public Health Responses to COVID-19 Outbreak: A Rapid Review

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What's Known

- Emergency situations like outbreaks have caused various issues globally.
- National and international responses to the outbreaks have had a critical role in reducing the infection rates and preventing the diseases from spreading. Social isolation and quarantining were beneficial in the previous epidemics.

What's New

- Some countries were well-prepared for the outbreak of Coronavirus disease 2019 (COVID-19). However, other regions need to be more promptly adapted to the situation.
- According to the results, quarantine and social isolation would be successful techniques to confront the COVID-19 pandemic and an immediate response is a key factor to halt the spread.

Abstract

Background: The outbreak of Coronavirus disease 2019 (COVID-19) has posed a significant threat to many countries. Since the disease does not currently have a particular treatment, there is a compelling need to find substitute means to dominate its expansion. In this rapid review, we aimed to determine some countries' public responses to the COVID-19 epidemic.

Methods: In this study, academic databases, including MEDLINE, Scopus, and Embase, were investigated. The keywords applied in the search strategy besides the names of each country were: "Public Health," "Public Response," "Health Policy," "COVID-19," "Novel Coronavirus," "2019-nCoV," and "SARS-CoV-2". The countries included China, Italy, Iran, Spain, South Korea, Germany, France, United States, Australia, Canada, Japan, and Singapore.

Results: The total number of retrieved articles in MEDLINE, Scopus, and Embase in April 2020 was 594, and after removing 259 duplicate articles, 335 papers were screened by the experts. After this investigation, 50 articles, in addition to 12 webpages, were extensively reviewed for the results section. Public health strategies and responses can be divided into four main areas, including monitoring, public education, crowd controlling, and care facilities.

Conclusion: According to the results of the management decisions of some governments on quarantining, social isolation, screening methods, and flight suspensions due to the severity and anonymity of COVID-19, it is highly assured that these strategies would be the most successful approaches to confront the present pandemic. Governments should put in place timely and strict measures to halt the spread and diminish its unintended deadly consequences.

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Introduction

Brief background and objectives

At the end of December 2019, Novel Coronavirus-infected pneumonia cases were recognized in Wuhan City, China.¹⁻³ These cases, with unspecified etiology, presented with symptoms of dyspnea, fever, dry cough, and bilateral lung infiltration on radiographs. The virus was named Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), and the disease was called Coronavirus disease 2019 (COVID-19) by the World Health Organization (WHO). In late January 2020, WHO

announced the COVID-19 outbreak as a Public Health Emergency of International Concern in which countries with vulnerable healthcare facilities may be at an excessive hazard. The disease transmission may be disrupted by early diagnosis, social isolation, instantaneous therapy, and other control measures.¹ This infection has imposed remarkable perils on the global health systems and economic sectors of countries. Since the disease does not currently have a particular treatment, there is a compelling need to find substitute means to dominate its expansion.⁴

COVID-19 outbreak has led the public health officials of several countries to enact policies and manage the spread of the disease by employing different strategies, including encouraging people for self-isolating and quarantining. This rapid review aims to summarize these strategies and responses in some countries and, subsequently, discuss how these measures could help in curbing the virus transmission and comparing the effectiveness of their policies looking at the number of total cases in each of the mentioned countries. The extracted results may be helpful for both policymakers and researchers.

Methods

Search Strategy

In this rapid review, academic databases, including MEDLINE, Scopus, and Embase, were investigated. The keywords applied in the search strategy besides the names of each country were: “Public Health,” “Public Response”, “Health Policy”, “COVID-19”, “Novel Coronavirus,” “2019-nCoV”, and “SARS-CoV-2”. The countries included China, Italy, Iran, Spain, South Korea, Germany, France, United States, Australia, Canada, Japan, and Singapore. In addition to this search, the official government websites of some countries, creditable news websites, and LitCovid literature hub⁵ were also reviewed to acquire additional data about the recent national

responses and control strategies. After removing duplicate articles, the abstracts of the remaining papers were screened by four experts, including an epidemiologist, a medical informatics expert, a statistician, and an infectious disease expert. Those relevant articles meeting the inclusion criteria were consequently selected to include in the study.

Inclusion and Exclusion Criteria

The inclusion criteria were as follows: 1) Articles reported public health responses to COVID-19 outbreak or control measures when experiencing the virus outbreak, 2) Articles written in the English language, and 3) Articles published in 2020. The papers lacking these measures and out of scope ones were excluded from the study.

Results

The total number of retrieved articles in MEDLINE, Scopus, and Embase in April 2020 was 594, and after removing 259 duplicate articles, 335 papers were screened by the experts. After this investigation, 50 articles, in addition to 12 webpages, were extensively reviewed for the results section. In Table 1, public health responses to the COVID-19 outbreak based on each country are categorized. There are various means by which preventing further transmission of the virus can be conducted, including investigating, categorizing, monitoring, and managing contacts by identifying the patients’ travel routes. Many countries enacted policies on travel restrictions, such as flight suspensions⁶⁻¹⁴ or close monitoring of the incoming travelers on their arrival at the international airports.^{13, 15-17} Some other countries have implemented social distancing and quarantine policies to fight this highly contagious disease¹⁸⁻²⁰ as well as encouraging the limitation of social contacts, postponing events, locking down schools, and isolating suspected cases.^{14, 21} Technological approaches such as telemedicine for remote

Table 1: Main control measures in the world categorized based on countries

Country	Main control measures	Reference	Publication/cite date
China	Implementing strict movement limitations and absolute lockdowns in some cities	Anzai et al. ²⁶	February 24, 2020
	1. A travel ban was started on January 23, 2020.	Chen et al. ¹⁴	February 20, 2020
	2. Social contacts were limited.		
	3. Government policies were enacted during the Chinese New Year holiday, such as social distancing policies.		
	4. People were encouraged to stay at home and avoided being in crowds.		
5. Crowded public events were postponed or canceled; schools, universities, government offices, libraries, museums, and factories were closed.			

Country	Main control measures	Reference	Publication/cite date
	Containment strategies and core measures such as social distancing, case isolation, close contact tracking management, closing epidemic areas, and traffic controls were used to diminish movements and environmental actions were done to increase personal protection.	Chen et al. ²⁷	February 17, 2020
	Wuhan - the outbreak's epicenter, was quarantined.	Du et al. ²⁸	May 2020 <i>early release</i>
	Online and offline wildlife sales and transportations (except fish and seafood) were prohibited in China due to Coronavirus outbreak. In case of any violation, lawbreakers were severely penalized.	Loeb ²⁹	February 8, 2020
	<ol style="list-style-type: none"> 1- By January 26, 2020, the first-level emergency response system for public health and safety had been triggered by 30 provinces in China. 2- China provided extra funds for public health, prevention, and management of the epidemics. 3- The Spring Festival holiday was extended, the spring term was deferred, mass meeting events were canceled, and transportation capacity regulations were enacted to diminish mass movement of people. 4- Residents of each community were isolated by civil society organizations. 5- Social isolation, home quarantine, and provision of personal safety devices such as facemasks were introduced to deter widespread transmission of the virus to the nation. 6- Providing simple and easy access to credible information and expert advice to help diminish speculations and misconceptions. It was brought to people by technological advancements. 7- The approaches to prevention and management have been modified throughout time to adapt to the challenging and modifiable circumstances. 	Zhang et al. ³⁰	March 25, 2020
	<ol style="list-style-type: none"> 1. China underwent extreme and massive lockdowns. 2. Borders were restricted, and international visits were limited. 3. Trains and flights were suspended, and roads were closed. 4. People were soon advised to stay at their houses and to come out solely in case of necessity. 	Cyranoski ³¹	March 17, 2020
	Large-scale, temporary, well-equipped Fangcang shelter hospitals were established in China for patient isolation purposes.	Chen et al. ³²	April 2, 2020
	Initial measures in Wenzhou, China: <ol style="list-style-type: none"> 1. Assigning suspected and confirmed cases to pre-specific hospitals. 2. Investigation and tracking new arrivals from Wuhan through the utilization of a big-data network- They were subsequently convinced to go through a 14-day quarantine at their own houses. 3. Gathering and monitoring people who exposed to COVID-19 confirmed cases. 	Ruan et al. ³³	April 3, 2020
	Secondary measures in Wenzhou, China: <ol style="list-style-type: none"> 1. Traffic shut down of trains, buses, and planes. 2. All public gathering sites were closed, and community activities were canceled. 3. High-risk individuals were investigated and monitored promptly. 4. Seriously-ill patients were transferred to a specialized hospital for intensive care, and their close contacts were medically observed. 		
Italy	On February 21, the Italian government established an emergency task force of Lombardy and the policies of local health to respond to the virus outbreak.	Grasselli et al. ³⁴	March 13, 2020
	<ol style="list-style-type: none"> 1. National measures to restrict viral spread including the air travel ban from China, quarantining Italian passengers in China, and severe controls at international airports' arrival terminals were implemented 2. An algorithm for the recognition of the suspected cases was designed. 	Spina et al. ¹³	February 28, 2020
	A surveillance system was launched at the beginning of the virus outbreak to gather information about the infected Italian people.	Onder et al. ³⁵	March 23, 2020
	Social isolation became obligatory.	Sani et al. ¹⁹	April 4, 2020
	A response plan was recognized by a task force: <ol style="list-style-type: none"> 1. Setting up ICUs for COVID-19 confirmed cases. 2. Modeling suitable methods for detecting, isolating, and pre-triage of COVID-19 confirmed or suspected cases 3. ICU staff training in the field of personal protection and patient management. 	Carenzo et al. ³⁶	April 4, 2020
	Northern Italy entered an emergency shutdown on 8 March, and three days later, the government applied the quarantine to the entire country. Subsequently, it was announced that the lockdown would continue to at least April 3.	Paterlini ³⁷	April 2, 2020
	National and regional governments established urgent control measures, including the development of quarantined areas that covered more than 50000 residents.	Guzzetta et al. ³⁸	March 25, 2020

Country	Main control measures	Reference	Publication/cite date
	<ol style="list-style-type: none"> 1. Rapid institutional responses. 2. Announcing the condition of national emergency on 31 January 2020 3. Applying restrictions on public events and activities- which had an impact on colleges, conferences, and sports activities 4. Locking down of hospital wards, limiting the entrance to hospitals by visitors, establishing alternative triage areas, designating mobility and segregation locations for patients, and canceling several elective procedures to diminish the burden on critical care capacity. 5. Designating all Italian regions as “red zones” with imposing severe restrictions on any public event on 11 March 2020 6. Utilization of tele-counseling sessions 7. Home isolation of COVID-19 patients who were not terribly ill 8. Creation and broadcasting informative video clips. 	Sorbello et al. ²⁴	March 27, 2020
Iran	New restrictions were imposed on the intercity traffic.	Iran Ministry of Health ³⁹	March 14, 2020
	<p>The control and management of COVID-19 have become a major priority for Iran’s ministry of health and medical education. It has established control strategies to curb the virus spread:</p> <ol style="list-style-type: none"> 1. Establishing the corona fight national committee 2. Informing the public about the virus and protective measures through media platforms 3. Limiting congestion in crowded regions, such as religious sites and stores 4. Shutting down educational institutes (e.g., schools and universities). 5. Diminishing working hours in many offices and departments 6. Calling off sports events 7. Disinfecting and sterilizing crowded areas including bus stations and subways 8. Controlling and detecting COVID-19 suspected individuals at entries and exits of several cities 	Abdi ⁴⁰	March 20, 2020
	A novel detection and triage technique was developed and volunteer radiologists offered teleconsultation services.	Davarpanah et al. ²²	March 24, 2020
	All industries were required by the Iranian authorities to collaborate with the Ministry Health and Medical Education and provide all needed facilities.	Seddighi ⁴¹	March 27, 2020
	<ol style="list-style-type: none"> 1. A self-monitoring website was developed for individuals. 2. Two hotlines with more than 10000 lines were established for teleconsultations and phone screenings over COVID-19 issues. 3. National executive teams were created to aid in preventive and controlling processes against the virus. 	Raeisi et al. ⁴²	April 1, 2020
	The public was encouraged for self-isolating at their houses.	Moradzadeh ⁴³	April 3, 2020
	Intelligent social distancing would be implemented following the previous phases.	President of Iran official website ⁴⁴	April 4, 2020
Spain	<ol style="list-style-type: none"> 1. In January, a health screening protocol was implemented by the government. 2. Transparent information was ordered to be released. 3. The protection of highly exposed people to the disease was prioritized. 4. Support of health workers, families, and companies was planned. 5. The president demanded unity and social responsibility. 	Government of Spain official website ⁴⁵	March 18, 2020
	<ol style="list-style-type: none"> 1. The global lockdown was extended as the death rate surged. 2. Non-essential employees were forced to stay home. 	The Guardian News ⁴⁶	March 28, 2020
Japan	<ol style="list-style-type: none"> 1. Travel restrictions were conducted to and from Wuhan city. 2. The authorities held the process of evacuation for the passengers of the flights dated from 29 to 31 January 2020, and they were screened with portable thermoscanners and tested for COVID-19. 	Nishiura et al. ¹²	February 4, 2020
	Systems to diagnose the virus were urgently developed. Real-time RT-PCR and nested RT-PCR assays were adjusted.	Shirato et al. ⁴⁷	February 18, 2020
	All 3,711 passengers and crew members of the Diamond Princess ship were quarantined by the order of the Japanese government.	Sawano et al. ⁴⁸	March 14, 2020
	<ol style="list-style-type: none"> 1. A month-long emergency state was declared by Japan’s prime minister (until 6th May). 2. People were asked to limit their contacts with other individuals and obey social distancing policies. 	The Guardian News ⁴⁹	April 7, 2020

Country	Main control measures	Reference	Publication/cite date
France	An increased observation was performed on January 10, 2020, to detect imported cases early and prevent secondary transmission of the virus in the community or health workers.	Stoecklin et al. ⁵⁰	February 13, 2020
	France approved, reimbursed, and strongly encouraged the utilization of telemedicine (e.g., tele-expertise and remote-consultation).	Ohannessian et al. ²³	April 2, 2020
	1. The president of France announced that the country would be considered as being in a condition of war on March 12.	Ghanchi ¹⁸	April 7, 2020
	2. Schools were locked down.		
	3. Self-quarantining, social distancing, and limiting social interactions were advised.		
	4. Several public areas were ordered to close.		
	5. Local municipal elections were postponed.		
Germany	1. Sensitive diagnostic assays were rapidly established in public health laboratories.	Conrad et al. ⁵¹	March 5, 2020
	2. A massive contact probe around the first German patient with the virus was instantly commenced, with more than 700 samples.		
	People were requested to stay home.	France 24 News ⁵²	March 17, 2020
	Travel restrictions and border control measures were expanded for travelers from other EU countries.	The Politico ⁵³	March 19, 2020
	1. Gatherings of more than two individuals were prohibited.	The Politico ⁵⁴	March 22, 2020
	2. Some non-critical businesses underwent compulsory shutdown.		
	Social distancing policies were announced by the chancellor of Germany.	The Guardian News ⁵⁵	April 5, 2020
Canada	1. Performing a comprehensive health screening of returning travelers in 10 major airports.	Government of Canada ¹⁶	March 5, 2020
	2. Control of the outbreak and the prevention of the future spread were focused on.		
	3. Emergency Operation Centre was established.		
	Canada has positively been influenced by the experience of the SARS outbreak (e.g., in the field of virtual care and diminishing exposure hazards).	Webster ⁵⁶	March 21, 2020
As a part of the economic response plan in Canada, employers who were hugely affected by COVID-19 pandemic, have been financially supported.	Government of Canada ⁵⁷	April 12, 2020	
Singapore	1. The country had increased pandemic readiness due to its experience in the outbreak of SARS in 2003.	Lee et al. ¹⁷	March 13, 2020
	2. Multi-Ministry Task Force was established before the presence of the first COVID-19 case.		
	3. Employing complementary diagnostic methods and containment and surveillance measures to detect cases		
	4. A network of preparedness facilities was set up to manage infected cases.		
	5. Screening estimations, including temperature measures, were held for incoming travelers.		
	6. Social and community assessments were performed.		
	OR response measures were introduced, i.e.:	Wong et al. ⁵⁸	March 4, 2020
	1. An isolated OR was set up.		
	2. Workflow and processes were modified.		
	3. The staff was managed.		
4. Clinical guidelines for anesthetic management were implemented.			
ICU responses to the virus outbreak:	Liew et al. ⁵⁹	March 9, 2020	
1. A common strategy of containment was launched for healthcare settings.			
2. All confirmed or suspected cases were isolated.			
3. Solutions were introduced to address issues of critical care, including the control of infection, the flow of information among health personnel, psychological problems in healthcare workers and their exhaustion, progressive ICU services, and resuscitation response.			
1. On January 2, 2020, all physicians were alarmed to detect any pneumonia case and a travel history to Wuhan in recent days.	Wong et al. ⁶⁰	February 20, 2020	
2. On January 3, 2020, temperature screening of the incoming travelers was started at airports.			
Various preventive policies have been implemented to impede COVID-19 dissemination (e.g., quarantine order and stay-home notice).	Singapore Government Agency Website ⁶¹	March 25, 2020	

Country	Main control measures	Reference	Publication/cite date
	Plenty of sources, including social media, websites, mobile applications, posters, and videos, as well as hotlines and chatbots, were delivered to the public.	Singapore Government Agency Website ⁶²	April 10, 2020
South Korea	Information gathering methods were used to monitor and manage COVID-19 cases and their contacts, using <ol style="list-style-type: none"> 1. CCTV 2. Medical facility records 3. GPS 4. Card transactions 	COVID-19 National Emergency Response Center ⁶³	February 18, 2020
	Patients were transferred to national quarantine stations or medical centers for isolation.	Moran ki ⁶⁴	February 9, 2020
	<ol style="list-style-type: none"> 1. Mobilizing hospital beds for infected cases 2. Using accommodation facilities (training institutes) 3. Releasing safety measures for healthcare workers and other people 4. Many public health physicians were ordered by the government to be under specialized training courses to treat COVID-19 cases. 	Sun Huh ⁶⁵	March 7, 2020
	<ol style="list-style-type: none"> 1. The government hired volunteer health care workers and assigned emergency teams from the army to tackle the epidemic. 2. Extensive monitoring, efficient patient triage, transparent information delivery, and utilization of information technologies were employed. 3. The government has developed more than 600 COVID-19 screening centers. 4. GPS records from patients' mobile phones or records of their credit cards were used to create maps of their movements. The maps were subsequently sent to residents of the desired neighborhood or shown on the internet to alarm the people for precautions. 	Her ⁶⁶	April 3, 2020
	<ol style="list-style-type: none"> 1. Employing screening strategies at the airports. 2. Rapid investigation of cases. 3. Evidence-based and reality guided behavior. 	Moradi & Vaezi ⁶⁷	April 3, 2020
	The opening of schools was postponed from March 2 to April 6 by the Ministry of Education to diminish the virus transmission.	Kim et al. ²¹	April 6, 2020
United States	<ol style="list-style-type: none"> 1. Suspension of entry to the US 2. Executing forceful measures including screening of travelers arriving from china and case identification 3. Establishing a thorough regulatory system including setting up quarantine stations 4. Public health assessments 	Patel & Jernigan ¹¹	February 4, 2020
	<ol style="list-style-type: none"> 1. Detecting cases and contacts of persons infected with the virus 2. Evaluation, screening, and care of incoming travelers from zones with a considerable transference of the virus. 	Daniel B. Jernigan ¹⁵	February 28, 2020
	<ol style="list-style-type: none"> 1. Social distancing strategies were promoted to aid in "flattening the curve" (i.e., decelerating the emergence of new cases). 2. Travel was restricted, meetings and concerts were canceled, and colleges and universities began taking students off campus to online courses. 3. The medical schools fell into line, with additional motivating factors. 	Stokes ⁶⁸	March 25, 2020
	Telemedicine, specifically video consultation, was supported and developed to reduce spread hazards.	Ohannessian et al. ²³	April 2, 2020
Australia	The country released weekly epidemiology reports on COVID-19 outbreak and the status of Australia <ol style="list-style-type: none"> 1. Denial of the entrance permission to people who have traveled to China 2. Active investigation of Australian cases 3. Announcing stricter travel restrictions 4. Extending the 14-day quarantine rule for all international passengers, irrespective of the country, as well as physical distancing policies. 	COVID-19 National Incident Room Surveillance Team ^{6-10, 69}	February and March 2020
	<ol style="list-style-type: none"> 1. Implementing powerful educational messaging for the public 2. Closing the country borders 3. Shutting down non-essential businesses 4. Implementing protective measures and social distancing policies 5. Quarantining suspected or confirmed cases 6. Activating health emergency response plan 7. Initiating a primary care package by the government 8. Adopting Telehealth services (e.g., mental health, infection prevention and control). 	Kidd ²⁰	April 2, 2020

RT-PCR: Reverse Transcription Polymerase Chain Reaction / OR: Operating Room / ICU: Intensive Care Unit / CCTV: Closed-circuit Television / GPS: Global Positioning System/ EU: European Union

consultation or monitoring have also been utilized in some regions in the period of the outbreak.^{20, 22-24}

According to the published articles, public health strategies and responses are divided into four main areas:

1) *Monitoring*: In this respect, countries investigate the whole or parts of the community by either using tele-monitoring strategies or broad investigation in airports or borders of the region. Approaches, such as the utilization of Global Positioning System/credit card records or the development of websites for self-monitoring or psychological consultation services, were also employed in some countries, specifically in South Korea and Singapore.

2) *Public education*: To provide community education, many governments attempted to offer transparent information about the virus. Additionally, information on preventive measures or proper practices in the community were delivered to the people through diverse sorts of media or messaging services.

3) *Crowd controlling*: Governments employed some policies to diminish gatherings. These approaches included social distancing, quarantining, street traffic controlling, school and university closures, postponing events, and shutting down some businesses.

4) *Care facilities preparation*: Constructing or preparing suitable care settings, including major hospitals with the highest degree of facilities, were other responses in some countries. Hospitals or shelters for caring suspected or confirmed cases at both stages of therapy and recovery were built or allocated. These facilities might subsequently reduce the death rate in these countries.

The mentioned control measures control measures in some countries could bring success strategies in coping with the current outbreak. However, other countries require to enact stricter laws or implement more practical policies. Based on the Worldometers website,²⁵ some countries could control the virus, and their total cases rate has remained steady after a specific date. Some other countries with a rising rate of total cases curbed their death rate, although their cases are still growing to a higher degree.

Discussion

The world has encountered three outbreaks since 2002 with the epidemic of SARS-CoV, followed by MERS-CoV in 2012, and COVID-19 in 2019, which spread swiftly to several countries and threatened public health.⁷⁰ The immediate spread and its high transmission rate between

people have caused global distress.^{71, 72}

In South Korea, some methods for information collection were introduced for the screening and management of COVID-19 cases. By employing these techniques, precise information about the location and time of exposure and other details would be accessible to the general public. Since the release of a patient's contacts violates the patient's privacy, a protocol to protect this critical issue must be created.⁶³ Early and rapid responses to the outbreak as well as implementing preventive strategies, have helped South Korea to preclude community infection and limit it to some specified medical centers. By utilizing appropriate approaches, entrance of COVID-19 patients, and simultaneously, the dissemination of the virus across the country have been deterred.⁶⁷ Although South Korea was once one of the most infected countries outside China, the outbreak has reached a period of stability after stringent monitoring approaches and mass quarantine.¹⁷ Based on the "Worldometers" statistics, the total cases in South Korea had been rising sharply until early March 2020, while since then, the rate has been experiencing a gradual increase.²⁵

Singapore has used a robust surveillance program to identify many cases and restrain them at a personal level. By early identification of cases by monitoring and intensive contact tracking among confirmed cases along with implementing border control policies, Singapore has managed to prevent the virus from spreading without substantial disturbances to daily routine life.¹⁷ Additionally, Singapore had the experience of the 2003 SARS outbreak and performed well due to its readiness. Intensive Care Units (ICUs) of the country were fully prepared and responded swiftly to the virus outbreak.^{17, 58, 59}

Although in Australia, the number of confirmed cases is rising, the death rate in this country has remained relatively low. This might be the consequence of the country rapid response to the emerged crisis through control measures such as social distancing, public education, and the use of technological advancements.²⁰ Similar to Australia, Singapore has experienced a very low death rate, thanks to its early responses and control policies.²⁵

Iran is among countries that have launched a psychological assistance system for residents as well as establishing a self-monitoring website for suspected cases of COVID-19.⁴² This country has made several attempts to combat the epidemic, but now it seems that it takes more cohesive, prompt, and effective interventions to halt the spread of this virus, specifically among the most susceptible population.⁷³ Additionally,

adequate and stable economic resources and the effective utilization of them are required.⁷⁴

Social distancing and travel restrictions were among the key methods used by Japan government to confront the recent crisis.^{12, 49} This country has successfully controlled the virus outbreak with a comparatively low casualty rate.²⁵

According to the epidemic control experts of Canada, the experiences with the SARS outbreak could positively affect Canada's response to the epidemic of COVID-19, specifically in the field of facility preparation. However, the increased burden in hospitals and care settings due to the growing number of new cases might remain a key challenge.⁵⁶

Given the accelerated proliferation of the disease and the need to offer urgent care treatment to an increasing number of patients, the current COVID-19 outbreak in Italy has imposed a tremendous pressure on the healthcare system.³⁸ Although the Italian health system was highly equipped, and the government responded rapidly to the outbreak, this country was not prepared enough to deal with the COVID-19 epidemic, and the number of cases is still rising. This situation has led to several challenges for the healthcare system all over this country. It seems that more appropriate measures of team working, proactive planning, and training can provide a better support in coping with this epidemic.²⁴ In Italy, data on the prevalence of the disease in asymptomatic individuals were deficient. Therefore, the actual prevalence and precise mortality rate were unclear. In this case, more apparent and comprehensive data are also required to help decision-making and increase consciousness among the public.⁷⁵

Although some countries such as Spain and France have implemented of suitable control strategies including massive lockdown to combat the epidemic,^{18, 46} more real-time screening of the transmission and mortality are required to be prioritized in these countries.⁷⁶ In Spain, the government's late response to the outbreak was the leading cause of its failure in controlling the disease. In addition, due to the financial crisis in this country, the hospitals have been experiencing an austere decade.⁷⁷ In France, the underlying reasons might be different; the French citizens tended to follow the national lockdown policies less firmly than other nations.⁷⁸

At the beginning of the epidemic, China led the virus transmission rate with the fastest pace of the spread, while in the next few weeks, other countries took over China.⁷⁹ As mentioned above, Italy and Spain confronted a remarkable

increase in the number of confirmed cases and deaths. As on March 19, 2020, it was reported that Italy overtook China with more than 3400 deaths from the virus⁸⁰ and at the time of writing, United States has the highest total cases compared to other countries.²⁵ In the United States, the comparison between New York and California would be an excellent illustration of a rapid response. California, unlike New York, has successfully managed to curb the virus from spreading. Disease prevention experts believe that the most significant distinction between these two regions is not a matter of population or location, but the time people began staying at home, and distinctions in their social distancing approach. In general, New York has experienced nine times more number of cases, seven times higher number of hospitalized patients, and fourteen times more fatalities than California.⁸¹

Although China was the first infected country with once the highest rate of confirmed cases and mortality, looking at its present statistics, it can currently be categorized as a successful country in controlling the disease with strengthened strategies and public health response.²⁵ The community was also well-informed on COVID-19's significance to conform with the national approaches of mask-wearing, hand-washing, social distancing, and temperature screening. Additionally, by retaining a firm containment policy, China is seeking to restore usual social and economic activities.³⁰ However, in the early days of the epidemic, there were some failures and negligence, the government avoided identifying the epidemic and undermined its seriousness in the initial days.⁸²

Regarding management and investigative strategies, there has still been a remarkable unfamiliarity in many countries. In this case, international cooperation would be beneficial in controlling the pandemic,⁸³ and by screening the situation deeply, further knowledge about the new virus would be gained, and nations can respond better.⁸⁴ The most known measures to control and prevent the disease include finding suspected cases and their contacts, blocking the transmission of the virus by isolation and personal protection as well as managing the infection sources.⁸⁵ There are also some prediction models in which experts forecasted the positive impact of these plans on controlling COVID-19 infectious transmission.⁸⁶ More efficient clinical management of the infected patients in addition to public health preparedness¹ and a prompt and accurate screening of the epidemic are needed in all countries in order to succeed in managing the spread of the infection.⁸⁷

Conclusion

According to the results from the management decisions of some governments on quarantining, social isolation, and flight suspensions, it is highly assured that these strategies would be the successful techniques to confront the present pandemic due to the severity and anonymity of COVID-19. In addition to those strategies, some countries have focused more on the utilization of robust case detection and screening approaches. All in all, governments should enact serviceable laws and put in place timely and strict measures to halt the disease spread and diminish its unintended deadly consequences.

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