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Chapter 14

The coronavirus global pandemic and its impacts on society

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14.1 Introduction

Coronavirus disease 2019 (COVID-19) is the latest virus model, which is one of the biggest problems for the World Health Organization (WHO) [1–3], the Environmental Protection Agency (EPA), and almost all countries in the world, which destroys environmental sustainability, increasing mortality every day. As a result of the coronavirus pandemic, a number of adverse changes occurred in the global economy. Investors fear that further spread of the coronavirus will destroy economic growth, and governments may not be enough to stop the decline. In response, central banks have reduced interest

rates in many countries [2]. Theoretically, this should encourage spending on reviving the economy. However, stability will only be when the pandemic is stopped. Due to the spread of the coronavirus, planes were grounded, all scientific, sporting, and cultural events were canceled, and factories were closed. Coronavirus has therefore an impact on the entire global economy. An unexpected consequence is a decrease in greenhouse gas emissions in industrialized countries. But this good news for the environment can only be temporary. When the whole world is being asked to wash hands to combat a pandemic, the United Nations points out that 2.2 billion people have no access to drinking water and 4.2 billion of the world's population is deprived of safe sanitation. The economic crisis associated with the COVID-19 pandemic is associated with social, ethical, legal, and cultural issues [1,3,4].

Viruses invade a cell by latching onto certain proteins on its surface. Once attached, they can slip inside the cell and manipulate it into making new copies of themselves. But viruses cannot infect red blood cells. As red blood cells develop in the bone marrow, they lose their DNA. All viruses require the formation of a replicative form, a double-stranded DNA intermediate, for genome replication. It is created from the viral DNA with the assistance of the host's own DNA polymerase. Adult humans have roughly 20–30 trillion red blood cells at any given time, constituting approximately 70% of all cells by number. Women have about 4–5 million red blood cells per microliter (cubic millimeter) of blood and men about 5–6 million; people living at high altitudes with low oxygen tension will have more. Nutrients that increase red blood cell counts are red meat, organ meat, dark leafy green vegetables, dried prunes and raisins, beans, egg yolks, etc. [3]. The diet should be fresh, warm, easy to digest, containing whole cereals, seasonal vegetables, etc. Frequent sipping of water boiled with Tulsi (*Ocimum sanctum*) leaves, crushed ginger (*Zingiber officinale*), and turmeric (*Curcuma longa*) would be beneficial. Honey with a pinch of pepper powder is also beneficial in case of cough. Cold, frozen, and heavy foods may be best avoided [5].

There is a new public health crisis threatening the world with the emergence and spread of the 2019 novel coronavirus (2019-nCoV) or the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The virus originated in animals and their intermediaries were transmitted to humans in Wuhan, Hubei Province, China, in December 2019 [6]. A novel coronavirus has resulted in an ongoing outbreak of viral pneumonia in China with 1–3 person-to-person transmission having been demonstrated [7]. Coronavirus is not a new virus, but the family Coronaviridae is a recently characterized group of animal and human viruses. Coronaviruses are 60–220 nm in diameter, have a buoyant density in sucrose of 1.16–1.23 g/cm³, are sensitive to lipid solvents, contain a large single strand of ribonucleic acid, have regularly spaced surface projections from 12 to 24 nm in length, and bud from endoplasmic reticulum profiles into cytoplasmic vesicles in infected cells. Coronaviruses cause bronchitis in chickens, humans, and rats, acute enteric infections in baby pigs, calves, and puppies, hepatitis in mice, and encephalomyelitis and chronic vomiting and wasting in swine. Bovine coronavirus (BcoV) is widespread in

cattle population, resulting in heavy economic losses to both dairy and beef industries throughout the world. The syndromes associated with BCoV include winter dysentery in adult dairy cattle and respiratory and intestinal tract infections in young calves [8]. Feline infectious peritonitis (FIP) is a viral disease of cats that is characterized by peritonitis, pleuritis, or disseminated granulomata. FIP represents an uncommon secondary form of a common apparent or mild primary illness of cats. The FIP agent has strong morphology and physical similarities to known coronaviruses. Feline infectious peritonitis virus (FIPV) was found to be closely related to transmissible gastroenteritis virus (TGEV) of swine. TGEV and FIPV were in turn antigenically related to human coronavirus 229E (HCoV-229E) and canine coronavirus. In view of the recent recognition of some viral etiological agents of acute infantile diarrhea, coronavirus has also been associated with diarrheal illness with the electron microscopic demonstration in feces [9]. In 2003, severe acute respiratory syndrome (SARS) was the first emerging infectious disease of the 21st century that has been highly transmissible and fatal and was caused by a previously unknown coronavirus (SARS-CoV). The etiological agent was identified as a coronavirus (CoV) and the complete genome sequence of SARS-CoV Tor2 (Toronto) isolate was published in April 2003, which established it as a novel member of the family. The SARS-CoV-2 genome has been predicted to contain 14 functional open reading frames (ORFs). The comparison of different SARS-CoV ORFs with those of other CoVs revealed a similar pattern of structural gene arrangement with the replicase and protease genes (gene 1a–1b) and the spike (S), envelope (E), membrane (M), and nucleocapsid (N) genes in a 5 to 3 order of appearance. Interspersed between these well-characterized genes is a series of ORFs, many of whose functions are yet unknown [10]. Between 2012 and 2014, the coronavirus (MERS-CoV) was found to cause sporadic cases of severe acute respiratory infection in the Middle East. Coronaviruses are enveloped viruses, usually known to be fragile in the environment. However, enveloped viruses can persist in the environment for extended periods of time, even at 35°C. Fifteen minutes at 65°C is more than sufficient to totally inactivate the virus [11].

In December 2019, Wuhan, the capital city of Hubei Province and a major transportation hub of China, had cases reporting to the local hospitals with severe pneumonia of unknown cause. Many of the initial cases had a common exposure to the Huanan wholesale seafood market that also traded live animals. The surveillance system on the outbreak was activated and respiratory samples of patients were sent to reference labs for etiologic investigations. On December 31, 2019, China notified the outbreak to the WHO and on 1 January, the Huanan seafood market was closed. On 7 January, the virus was identified as a coronavirus that had >95% homology with the bat coronavirus and >70% similarity with the SARS-CoV. Environmental samples from the Huanan seafood market also tested positive, signifying that the virus originated from there [6]. The COVID-19 epidemic has spread very quickly, it took just

30 days to expand from Hubei to the rest of Mainland China. With many people returning from a long holiday, China was forced to prepare for the possible rebound of the epidemic [12]. Subsequently affecting several countries worldwide, COVID-19 is an acute resolved disease, resulting in death due to massive alveolar damage and progressive respiratory failure, with a 2% case fatality rate. Biopsy samples from the lung, liver, and heart tissue of the patient upon histological examination showed bilateral diffuse alveolar damage with cellular fibromyxoid exudates. The lungs show evident desquamation of pneumocytes and hyaline membrane formation, indicating acute respiratory distress syndrome (ARDS); or the lung tissues display pulmonary edema with hyaline membrane formation, suggestive of early-phase ARDS along with interstitial mononuclear inflammatory infiltrates, dominated by lymphocytes, in both the lungs. Multinucleated syncytial cells with atypical enlarged pneumocytes characterized by large nuclei, amphophilic granular cytoplasm, and prominent nucleoli identified in the intra-alveolar spaces show viral cytopathic-like changes [13]. Coronaviruses are a large family of viruses that cause illnesses ranging from the common cold to more severe diseases such as the Middle East respiratory syndrome-CoV and SARS-CoV. SARS-CoV-2 is a single-stranded RNA virus with a diameter of approximately 60–140 nm. It has a crown-like appearance under an electron microscope and is a β -coronavirus. It has presumably originated from bats with an initial animal-to-human transmission through an intermediary. Its subsequent spread is human to human, with infected people as the most frequent source of its spread. The incubation time of SARS-CoV-2 is usually 3–7 days but could be up to 2 weeks. The COVID-19 epidemic doubled about every 7 days, with each patient transmitting the infection to an additional 2.2 individuals [14]. It is always beneficial to avoid direct exposure to cold breeze. Appropriate rest and timely sleep are advisable. COVID-19 is characterized by the typical symptoms of infection, such as fever, cough, muscle aches, fatigue, and difficulty breathing. In more severe cases, the infection can cause pneumonia, SARS, kidney failure, and even death. The function of the immune system is critical in the human response to infectious disease [15]. Viral infections induce oxidative stress and cause damage to airway epithelial cells. A growing body of evidence identifies stress, nutrition, and immunity as cofactors in infectious disease susceptibility and outcomes. The mainstay in the management of corona viral infections has been supportive care, nutrition, and preventing further progression in the absence of any antiviral agent or vaccine [13,16].

14.2 Search methods

Medline, Web of Science, Scopus, and Cochrane Central Register of Controlled Trials were searched through July 31, 2020. Data on SARS-CoV-2 and medicinal plants were also collected, and various search engines were used, including Web of Science, PubMed, Google Scholar, and Scopus. This

review does not foresee linguistic restrictions but meets the required quality standards for scientific information.

14.3 WHO recommendations

WHO's surveillance has classified the disease as local transmission or imported case and suggested the strategic response objectives for COVID-19 as follows, based on the regular and direct contact with member states where cases have been reported by informing about the situation and providing support as requested through its networks of researchers and other experts to coordinate global work on surveillance, epidemiology, mathematical modeling, diagnostics and virology, clinical care and treatment, infection prevention and control, and risk communication [17].

Firstly, the human-to-human transmission of SARS-CoV-2 must be stopped by reducing secondary infections among close contacts and health professionals; secondly, prevent events related to the amplification of broadcasts and further spread in the international arena; thirdly, initiate the rapid identification, diagnosis, and management of cases, infection prevention and control in healthcare facilities, implementation of health measures for travellers, public awareness, and risk communication; fourthly, identify, isolate, and care for early patients, providing optimal care for infected patients, and finally, identify and reduce the transmission of SARS-CoV-2 from an animal source [18,19].

Four coronaviruses namely HKU1, NL63, 229E, and OC43 have been in circulation in humans and generally cause mild respiratory disease [6]. The basic reproduction number (R_0) is a central concept in infectious disease epidemiology, indicating the risk of an infectious agent with respect to epidemic spread. The R_0 for COVID-19 virus is an indication of the transmissibility of a virus, representing the average number of new infections generated by an infectious person in a totally naïve population. For $R_0 > 1$, the number infected is likely to increase, and for $R_0 < 1$, transmission is likely to die out. R_0 estimations produced at later stages can be expected to be more reliable, as they build upon more case data and include the effect of awareness and intervention. The average R_0 to be 3.28 and median to be 2.79 exceeds WHO estimates from 1.4 to 2.5. R_0 estimates for SARS have been reported to range between 2 and 5, which is within the range of the mean R_0 for COVID-19 found in this review. Due to similarities of both pathogen and region of exposure, and despite the heightened public awareness and impressively strong interventional response, the COVID-19 is already more widespread than SARS, indicating it may be more transmissible [12,20]. Preventive measures are to (1) follow good personal hygiene; (2) practice washing your hands frequently with soap; (3) follow the breathing etiquette—cover your mouth when coughing or sneezing; (4) avoid close contact with people who feel unwell or show symptoms of the disease, such as cough, runny nose, etc.;

(5) avoid contact with live animals and eating raw/undercooked meat; (6) avoid traveling to farms, live animal markets, or animal slaughter sites; and (7) wear a mask if you have respiratory symptoms such as cough or runny nose [21,22]. The clinical symptoms of the syndrome include fever, chills, rigors, cough, and headache, and the pathological aspects include lymphopenia, thrombocytopenia, elevated lactate dehydrogenase, and creatine kinase levels [10].

14.4 Treatment of COVID-19

Unfortunately, as at the time of this writing this chapter, there are no approved vaccines or medications for new coronavirus infection [23], but over 80 clinical trials have been started to test coronavirus treatment, including reassignment of some medications repositioning for COVID-19 [24]. Positioning drugs for other neglected diseases is necessary, as well as a universal strategy for the development of new drugs due to (1) lower costs and shorter time to reach the market, because some stages of the clinical trial may not be required, especially for phases I and II; (2) existing pharmaceutical supply chains are available for preparation and distribution; (3) possible combination with other drugs for treatment that is more effective than monotherapy; and (4) may facilitate the discovery of new mechanisms of action for old drugs and new drug classes [1,24,25]. Therefore, already in March 2020, a review of these studies was started. The eligibility criteria for the studies taken were primary [clintrials.gov](https://clinicaltrials.gov) identification number; description of the number of participants and study period; description of the clinical conditions of the participants; and intervention with drugs already tested or approved for any other disease in patients infected with the new SARS-CoV-2 coronavirus (2019-nCoV). Only trials listed in the clinical database trials.gov were included. More than 24 clinical studies have been identified involving more than 20 drugs, such as human immunoglobulin, interferons, chloroquine, hydroxychloroquine, Arbidol, remdesivir, favipiravir, lopinavir, ritonavir, oseltamivir, methylprednisolone, bevacizumab, and traditional Chinese drugs. Although there is some limit to changing drug use, changing the position of clinical trials can be an attractive strategy because they help discover new classes of drugs, have lower costs, and need less time to reach the market. There are also pharmaceutical supply chains for formulation and distribution [26,27].

There are reports of some *in vitro* antiviral activity and prognosis of the optimized hydroxychloroquine dosing regimen in the treatment of SARS-CoV-2 [4,12]. Recently, at least 12 potential treatments for COVID-19 have been tested, including drugs already used to treat HIV and malaria, experimental compounds that act against many viruses in animal experiments, and plasma rich in antibodies from people who have recovered from COVID-19 [2]. The power of COVID-19 virus, its adaptability to weather, environment, race, body composition, spreading speed, long incubation period, rapid development, long out-of-body survival, and mutation rate that breaks other types of

coronavirus records, is particularly harmful to the world. A healthy person with a negative COVID-19 test can carry a large amount of COVID-19 virus to allow others to infect up to 30 days [28]. WHO chose an experimental antiviral agent called remdesivir; antimalaria drug, chloroquine (or its chemical cousin hydroxychloroquine); the combination of anti-HIV drugs lopinavir and ritonavir; and this combination plus interferon-beta, an immune messenger that can help cripple viruses [22]. Although the use of chloroquine and hydroxychloroquine have been cautioned, more studies are needed to support or oppose existing hypothesis.

14.5 Impact of cultural factors on the spread of the fight against coronavirus

Data from July 29, 2020 around the world showed the following: infected 16,558,289; deaths 656,093; new cases 25,127; mortality rate 4.9%; and the number of countries infected with COVID-19 180 [1]. It is about disease diagnoses, development, and treatment data. Taiwan had a bad experience with SARS. This time China was cheating Taiwan, just like China was cheating the world. So, for COVID-19, Taiwan relies on SARS past experience and disease development depends on prevention and treatment in individual countries [20,23].

14.5.1 Africa and the COVID-19 outbreak

China is Africa's biggest trade partner and around 10,000 Chinese firms are currently operating throughout the continent. According to Chinese state media, more than 1 million Chinese nationals live in African countries. Ebola is different from the coronavirus. Ebola only became infectious when symptoms showed; however, there have been reports that in some cases, the coronavirus may have been transmitted before patients showed symptoms. More than 7 million people in South Africa live with a virus that seriously weakens immune systems, leaving many people potentially more vulnerable to COVID-19. Despite that, years of complacency about infectious diseases, the antibiotic era, immunizations, and improved public health measures have led to the fact that people now live longer and tend to die later of chronic diseases. It has not been true in many developing countries. Infectious diseases remain the major causes of morbidity and mortality in much of the world [29]. The opportunities are increasing thanks to ecological changes and globalization, which gives the microbes great opportunities to travel along with us and to travel very quickly. Even medical technologies have played an inadvertent role in helping to disseminate emerging infections. Resilience is the ability of a system to reduce the chances of a crisis occurring, mitigate the impacts of a crisis, and recover

its essential structures and functions quickly. The speed of recovery from a crisis (or stress event) will depend on different forms of capital (social, political, economic) built up in the phases before the event. Understanding resilience concepts can help to identify the necessary interventions to enable a system to maintain its essential functions and allow faster and more successful regeneration [30]. We need to act early and act together. Coronavirus is a global crisis that is going to require a global solution. Valuable lessons from Ebola helps to fight the coronavirus. The following are valuable lessons from Ebola outbreak and how it could help in the fight against coronavirus:

- Caring for patients at home requires hand washing and hygiene as the first line of defense against viruses such as Ebola and SARS-CoV-2. Once good hygiene measures were in place in hospitals, schools, and other public places, there was a drastic reduction in new cases [31];
- Health workers need to have the knowledge and the resources to stop viruses such as Ebola and coronavirus in their tracks. Underfunded and dysfunctional health systems cannot contain an epidemic. One of the most important and lifesaving measures to put in place was to divide Ebola treatment centers into zones, with infected patients isolated in the high-risk zone (red and green zones) [32];
- The medical response alone should not be the focus area. Emotions and opinions play as important a role as biology when epidemics hit. Building community trust and removing misinformation is critical to the success of any public health program. The most crucial task is to convince people suspected of having the virus that it was in everyone's best interests that they be isolated and monitored. And then if they showed symptoms, we needed to convince them to come and receive care in the treatment. Building trust understands that patients are not just numbers; they are human beings with families who love them. And when someone died, they had to be buried in a way that was both safe and culturally acceptable [33];
- Allaying the fear and concern for loved ones far away. While advances in global travel and communications technology have helped immigrants maintain connections with these countries, they also provide channels through which the consequences of disease outbreaks abroad are experienced. News of the mounting deaths of family members can create a paralyzing feeling for immigrants [30].

14.5.1.1 COVID-19: case of Ghana

Many Ghanaians believed that the viral infection did not respond to African blood. Therefore, when the news of the WHO came across that it declared COVID-19 as a global health pandemic and COVID-19 was confirmed in

Ghana, there was a great shock to many people. Many untruths about COVID-19 were spread via social media, and many clung to various myths about it, believing it was a ghost punishment for whites who historically oppressed the Black race. This can be attributed to delayed public education about COVID-19 in Ghana, which should have started in the early days of the outbreak [29].

Due to the high religious cosmology of the Ghanaian people, many of them hold the perception that faith in God can protect someone from getting infected with the COVID-19 virus. Faith-driven approaches such as prayers and fasting ensued among those holding religious faith among the three major religious sects namely Christianity, Islamic, and traditional African religion. This culminated into the declaration of a national day of fasting and prayers by the Ghana government on March 25, 2020. The president of the Republic of Ghana spearheaded the prayers for those in the Christian faith while the vice president did the same for those of the Islamic faith. As has been the popular cosmology among the Ghanaian people [34,35], the contents of most of the prayers and felicitations were for the spirits in the higher places to forgive them of their sins and intercede to cure the global COVID-19 pandemic. Interestingly, many of the so-called men of God rolled out several prophecies about the potential cause of the COVID-19 outbreak in Ghana, many attributing it to the high moral decadence in the country as well as the corrupt activities of those in power. Others claimed God has revealed the date the world would be able to end the COVID-19 outbreak, which was slated on March 28, 2020. The coming days proved the lies in those prophecies [35]. However, blindly viewing COVID-19 as a spiritual infection by many is a myth that needs to be erased from the minds of typical Ghanaians through a well-orchestrated public health education by the Ghana government. After the fact, Ministries of Information and Health stirred up efforts in their public education sensitizations in Ghana. This is in league with the directive from the Committee on Economic, Social, and Cultural Rights. The Committee posits that it is the primary obligation of governments to provide essential education and access to information regarding all health problems including sharing information on symptoms and preventive measures in their respective countries [35]. The various media outlets in Ghana increased their awareness campaigns of the COVID-19 pandemic, even sharing global health tips across countries as well as updates from the WHO.

The Ghana government via the ministries of information and health was giving daily situational updates on the COVID-19 as well as the creation of a website where all information on activities were carried out in Ghana to combat the spread of the COVID-19 [36]. This intense public education gradually informed the Ghanaian populace of the COVID-19. The popular preventive measures such as the regular hand washing with soap on a regular basis, the cleaning of the hands with alcohol-based sanitizers, and social distancing regulations [1,23,37] were constantly shared on television, radio, and various social media platforms.

The Ghana parliament has passed the COVID-19 National Trust Fund Bill, 2020 to be used in caring for patients of COVID-19 infection [38]. Many corporate agencies such as local and international banks, companies, religious groups, and well-meaning Ghanaians have donated generously to the fund as part of fulfilling their corporate social responsibilities [38]. The Ghana government has shown their resolve in fighting the COVID-19 outbreak in the country while concurrently attending to the socio-economic needs of their citizens. The president and vice president have forfeited their 3 months salaries to be used in combating the COVID-19 menace [39]. Some of the ministers of state have followed the patriotic example of the president by willingly offering their salaries to aid in the fight against the virus [38].

The Ghana government has given some incentives in appreciation of the sacrifices made by the frontline health workers by risking their lives in caring for COVID-19 patients as well as in conducting the perilous contact tracing task [40]. Frontline health workers have been given a financial buffer package of up to 50% of their monthly remuneration. Also, the government has absorbed their utility bills for the months of March 2020 to June 2020. Health professionals who have put their lives on the line in engaging in contact tracing exercises are rewarded with a daily stipend of 150 Ghana Cedis, almost 15 dollars. Aside from this, 350,000 Ghana Cedis insurance package has been given to frontline health workers and allied health professionals. The government of Ghana has provided them with buses to transport them from their homes to their places of work. The water bill for the months of March 2020 to June 2020 of the entire country has also been absorbed by the government in the attempt of helping the Ghanaian people to reduce the financial burden on them as a result of the COVID-19 outbreak [40]. Mass decongestion exercises have been carried out in market centers that often have a mass gathering of people. This is to aid in improving social distancing among people. Also, disinfection and/or fumigation of markets and streets using chlorine are carried out in all the regions of the country. The government has provided funding for the production of personal protective equipment (PPE) by local companies such as face masks, hand gloves, aprons, and other gadgets used by health workers. Vulnerable groups in the country are being taken care of by the government. The government intervention for vulnerable people project has given food items in the form of dry food and groceries. These giant efforts by the Ghana government are to help the country combat the COVID-19 pandemic.

14.5.2 South East Asia and the COVID-19 outbreak

14.5.2.1 COVID-19 in Asia and impact of cultural factors on the spread of coronavirus and fight against coronavirus

Quarantine restriction of movement of people is applied in case of a contagious disease to prevent spreading. Isolation is applied to people diagnosed

with the disease [41]. “A person’s true character is revealed in a crisis” is the time to testify during the COVID-19 pandemic around the world. Developments and globalization have made the world a small village, bringing the chance of knowing other cultures, making it so wonderfully diverse, and having been resulting in cultural closeness and cultural integration around the world. With help of internet technologies, especially social media, news spreads quickly and one from his room can watch the whole world instantly. Is the success of fighting COVID-19 pandemic in cultural norms or not? The reason why COVID-19 pandemic has spread widely in Italy, Spain, France, United States, Turkey, and so on is seen due to the ignorance of the people not obeying the rules and as a result of the government slow response. Despite that the effects and dangers of COVID-19 pandemic have been seen in China firstly, it was surprising seeing people on beaches in Miami or in the streets of Rome, Istanbul, Paris, and Barcelona with high number of deaths going about as if there was not any COVID-19 pandemic. Differences in “*quarantine culture*” is an important factor in decreasing COVID-19 cases. Many countries started to blame WHO for not restricting international transportation of human and trade from the beginning of January 31, 2020 [42].

Data from July 29, 2020 showed that there are 16,558,289 confirmed cases worldwide; 656,093 deaths, including new cases and a 4.9% mortality rate from about 180 countries [1]. It is about disease diagnoses, development, and treatment data. Taiwan had a bad experience with SARS. This time China was cheating Taiwan, just like China was cheating the world. So, for COVID-19, Taiwan relies on SARS past experience and disease development depends on prevention and treatment in individual countries. Due to the reproductive rate of the virus and high globalization, COVID-19 has affected millions of people around the world. The social, economic, and health of people have been affected negatively the world’s livelihood and well-being have been endangered [43]. Low-income and middle-income countries, weaker health systems, limited resources, and lower socioeconomic status can make the life of people challenging [44]. Widespread unemployment, closure of many small and independent businesses, geopolitical discourse about globalization, and an economic recession are secondary risks of COVID-19 [42–44].

14.5.2.2 COVID-19 outbreak in Asia: some examples

India, Iran, Turkey, Pakistan, and Saudi Arabia are countries with the highest COVID-19 cases while South Korea, Taiwan, and Vietnam have the lowest COVID-19 cases with successful control and adherence to quarantine and rules [45]. However, there are some objections that COVID-19 cases are shown less in some countries like Iran and China and the numbers of deaths are more than official numbers. A model developed by Massachusetts Institute of Technology and Virginia Tech showed that Iranian government official statistics are wrong, and the number of deaths is 10 times more than official figures [46].

14.5.2.2.1 COVID-19: the case of China

The first COVID-19 case was announced at Wuhan, the capital of Hubei, China. According to unverified documents in the internet, Huanan seafood market was the source of COVID-19 pandemic. According to Worldometers statistics [47], there are 4634 deaths and 84,165 total cases with 105 new cases on July 30, 2020 [1]. It was announced that 78,957 have recovered until this date. Lockdown and curfew, using face masks, helping unemployed people, canceling all ongoing courses and postponing the new semester, canceling organizations, and shutdown methods have been applied by China government to handle COVID-19.

Loyalty to the ruler is the core cultural value for social stability in China during COVID-19 pandemic. Traditional Chinese teachings focus on the family and the state emphasizing understanding show shared responsibilities and obligations among the members of the family and the state. Unquestioning submission to authority and loyalty to the rulers are parts of this education system and politics. “*We-are-in-this-together*” sentiment has reached its peak during this pandemic. Buying and delivering food, living supplies by people and medication to people’s homes, online crowdfunding for supporting poor people, etc., are some examples of that culture, showing solidarity in China [48].

There are public and media criticisms that Wuhan and Hubei authorities have failed to inform the world about the outbreak in its early stage. Discussions about the outbreak was censored by Chinese government from the beginning of its spread. Furthermore, it was stated that China governments have deliberately underreported the extent of infections and death [49].

14.5.2.2.2 COVID-19: the case of Taiwan

Taiwan is one of the most successful Asian countries against COVID-19 pandemic with a total of 7 deaths and 467 total cases until July 30, 2020 [48]. Experience of the SARS epidemic of 2002 and a rapid diagnostic test for COVID-19 helped Taiwan to a quicker and more effective response to COVID-19 pandemic. Technology for early detection and identifying and tracing suspected patients and high-risk individuals are other reasons of that success that people obey 14-day quarantine and are not violating the rules by sneaking out of their quarantine locations [50]. Furthermore, this success was due to early preparedness, health expertise, government competence, and popular alertness of the country. The country has applied different screening, testing, contact tracing, and enforcing quarantines with decisive leadership during the coronavirus crisis [51]. It is stated that Taiwan alerted WHO about COVID-19 potential of human-to-human transmission on December 31, 2019 and received no response with China denial of human-to-human transmission, while human-to-human transmission was accepted on January 21, 2020 by WHO, downplaying the global threat [50,51].

14.5.2.2.3 COVID-19: the case of Turkey

There have been 5659 deaths and 228,924 COVID-19 cases, which has increased logarithmically by July 30, 2020 [52]. Turkey has a long COVID-19 story which started when cases were reported in Iran and Italy. Initially, precautions were slowly taken and there was a big panic among young students at universities. In the beginning, the universities and schools at all levels were closed. The aim is to reduce the movement of people, thus reducing the spread of the virus. Toward the middle of March 2020, the president of Turkey asked people to observe “*self-isolation*.” However, young people went out of their homes against this advice because many young people were seen in cafes or malls which then led to the closure of the malls and cafe shops too. These precautions have not been successfully realized, while these time, young people and even some elderly people were seen on the streets walking or sitting somewhere. In the next stage, the restriction of the movement of old people (65 years and above) took effect. Even with the ban, some old people were seen outside in parks on social media or in videos as some went out to take their pensions. The last recent steps that were taken to curb the spread of the disease are the restriction of young people under 20 years of age from going out and not allowing any inputs and outputs from 30 big cities with strong distance requirements named social distancing response to COVID-19 and PPE while some mayors from Izmir and Istanbul urgently demanded a curfew on April 3, 2020. It is clear that there is a low quarantine culture from March 11, 2020 when the first COVID-19 case was found from a traveler coming from Europe. According to NTV news, the infected person and all those he had contact with were quarantined for 14 days [52,53]. It was observed that the government has not taken a clear and a quick strategy in fighting COVID-19 which was partly caused by political differences. Again, the general perception of the people also matters.

“*Nothing happens to me I am strong*,” “*we are not in the risk group*,” “*corona is a lie*,” “*God protects us what he wants will happen*,” “*Rohus tea protects us since a good Muslim in Turkey saw in her dream that Mohamed Prophet suggested it*,” “*this is a wrath of God to people*,” etc., were the statements circulated by people on different social media platforms and on the streets too, which is believed to be misinformation due to a low level of public awareness [30,52]. People have been confused based on information mainly unscientific and some of them believed these information. It was interesting to see that some people on March 24, 2020 still shook hands with each other which showed that they were not afraid of the COVID-19 pandemic in Turkey. It can be concluded from both sides that the people and the government do not have an established quarantine culture and emergency plan. Strong concerted effort was not seen among people due to political differences. Another reason why people have to go out is the need to work because of the bad economic situation. It is clear that religion, economy, and social media information have influenced the quarantine period and behavior of the Turkey people [52]. While some healthcare workers have

wanted to resign due to the risks of being infected, the Turkish government took measures to forbid resignations for at least 3 months. Also, it was reported that some healthcare staff demanded increase in salaries, while some healthcare staffs were angry that enough protective measures have not been provided. But where are the moral values? What will people think when they see that healthcare workers are not brave, and they want to use this time to earn more money? Many masks and disinfectants have been stocked in order to sell at higher prices in this hard time [30,52].

14.5.2.2.4 COVID-19: the case of Iraq

Iraq has had 4603 total deaths and 118,300 total cases (including the Kurdistan Region) until July 30, 2020 [54]. Six Arabic countries (Lebanon, Bahrain, Kuwait, Oman, Qatar, and Saudi Arabia) had contacted COVID-19 mainly from people who visited Iran or from travelers that visited. The shortage of quarantine facilities, limited availability of testing materials, a shortage in PPE and ambulances, a low level of public awareness, a shortage in hygiene preparations, and a high rate of antibiotic resistance in case of secondary bacterial infection were seen in Iraq [42]. Being stigmatized in Iraq has discouraged many Iraqi people from getting tested and seeking medical care, which also resulted in an undercount of cases and consequently more spreading. Moreover, the tradition of washing of deaths has been a source of worry for the government because of the continuous spread of the virus [55].

14.5.2.2.5 COVID-19: the case of South Korea

South Korea having a population of over 50 million with 14,269 COVID-19 cases and 300 deaths until July 30, 2020 [56], is one the most successful countries at applying the right strategies. Contactless free test procedures by applying 16,000 tests daily, one test per 185 people by protecting healthcare staff, preventing them to have any contact with tested people, quarantine aids by phones about where to go for tests, helping quarantined people with foods, PPE and disinfectant materials, and psychological counseling service were effective methods applied. Outside the hospital, tests with X-rays of the lungs are done in 15 min and results are sent to the mobile phone the next day with obeying isolation rules at home in case of negative and patients are called in case of positive results [57]. In order to create an atmosphere of trust, full transparency was applied, and two reports have been published in a day. In these reports, the locations of patients that are positive were shown on the maps where they last visited and what they did in order for them to be careful. Later, the places where these people visited were sterilized. If there is a positive person in the district where that person is located, a message was sent to the people in that region via mobile phone or the website of the municipality about the people who had tested positive. These applications have increased the trust in government [58].

14.5.2.2.6 COVID-19: the case of Japan

Japan having an old population of over 126 million with 31,901 COVID-19 cases and 1001 deaths until July 30, 2020 [57] is one of the most successful countries in the fight against COVID-19. A total of 32,125 tests were just carried out in a month [1]. Closing schools and restricting crowded gatherings are the main steps taken in Japan. Some experts say that the slow spread of coronavirus in Japan may be due to the fact that Japanese culture is inherently more socially isolated than other cultures. What's more, people in Japan have been wearing face masks for years when they were sick or allergic, so this natural tendency and social distance could also have prevented the early spread of COVID-19. Currently, low incidence rates can cause a “*false sense of security*” among Japanese. It is also possible that the coronavirus has not yet spread to the most sensitive populations, i.e., the low number of infected individuals in this group may not necessarily remain that way [57].

Based on self-observation and visits by some of the visitors, Japan is normal while the entire world is shut down and going to offices daily, having all essential services, open restaurants, malls, and no lockdowns are still done during COVID-19 pandemic. Also, metro trains and bullet trains work normally, and all international borders are open. Moreover, Japan has a high old population like Italy and one of the crowded cities, Tokyo, is in Japan with a high number of foreigners living there. The Japanese cultural rules are practiced from childhood to prevent COVID-19. About 60% of them wear masks daily even if they have a small cold. Public-facing persons like receptionists, government officers, doctors, nurses, station masters, train staff, police, janitors, etc., wear masks daily at work. Moreover, during winter, children wear a mask so that Japanese people do not bother others and they do not throw anything away. They use trash cans only for garbage or spit. Cleanliness as washing hands often and having soaps and sanitizers in public toilets, office entrances, and usually in every public space is part of their culture. They carry wet tissue packets to clean their hands occasionally when they go out. As they learn from the beginning, they do not handshake but bow to greet. Using sanitizers is common before entering the office and while using an elevator. They wash their hands and also clean and wipe the sink area too to make it comfortable for the next person to use it even at public metro stations and lastly there is a social distance among all of them during the day [57]. These rules are applied firmly in their daily life.

14.5.2.3 Effects of COVID-19 and improving adherence to quarantine

Banning meetings of more than two people and retreating to self-isolation in Germany, strict lockdown measures requiring a signed form justifying reason of going outside, and closing all “nonessential” businesses in France, Korea's aggressive social distancing measures, banning of going out for people >65

years and <20 years, etc., are some recent steps taken by countries to stop the spread of the virus [4]. Healthcare workers are in a critical stage of being infected, and dramatic increase in the number of infected individuals has led to the shortage of doctors and nurses. Working for long hours, not eating well, sleeping less, increasing the workload, shortage of protective coverings, sub-standard masks, and fear of being infected can cause stress and anxiety for healthcare staff. Furthermore, individuals in a critical condition are given priority and this may make other patients angry. Psychological counseling is also required to handle the fear of patients and healthcare staff. Using a video chat with doctors and family can increase the morale of patients and healthcare staff [59]. Metropolitan-wide quarantine applied in Wuhan on January 23, 2020 was effective at reducing transmission of COVID-19. Testing, contact tracing, and frequent hand washing were found to be the main factors at fighting COVID-19 in Wuhan, China. Sustaining high facial mask usage and limiting the public contact for preventing recurring of COVID-19 as a second outbreak can be the next stage of the plan until a vaccine is available [60,61].

During the early stages of infections, partial or entire cities quarantine can be applied and people upon returns from risky countries are also taken into quarantine; however, not obeying makes it useless, hence officially sanctioned enforcement of quarantine orders are necessary to make quarantine effective [41]. Self-isolation is necessary in case of any contact with the infection. The knowledge of people about the disease and quarantine procedure, social norms, perceived benefits of quarantine reducing the risk of transmission to others and perceived risk of the disease as with high fear (disease transmission and disease outcomes severity), and running out of supplies and financial consequences (need of work and fear of loss of income) are the main factors affecting adherence to quarantine. A lack of clear quarantine instructions can lead to people creating their own rules. Fake news and rumors (rumors of others breaking quarantine) can be prevented with clear information about quarantine protocols. Social pressure from others to adhere to quarantine as altruistic nature is necessary in public for promoting beliefs. Trust in government, length of quarantine, and experience and belief of healthcare workers are other factors that may affect adherence to quarantine protocol. Reinforcing social norms and moral values during the quarantine by religion with prayers can help increase adherence. Furthermore, a timely, clear quarantine and information about protocols can improve adherence to quarantine. Moreover, sufficient supplies of food, medication, and other essentials are to be provided by governments [62].

14.5.3 Middle East and India and the COVID-19 outbreak

14.5.3.1 COVID-19: the case of Middle East

Generally in Southeast Asia (India, Bangladesh, Indonesia, Nepal, Maldives, Sri Lanka, Myanmar, Bhutan, Timor), there were 1,949,850 cases of COVID-19

as of 30 July and 43,117 people died [63]. The largest increase in the number of infected people with SARS-CoV-2, which was in Southeast Asia, was recorded in Singapore, where a large increase in infections was observed, mainly among seasonal workers using occupational night shelters. There are also countries in Asia that have managed to prevent the epidemic from developing spontaneously. In Sri Lanka and Thailand, for example, the epidemic is moderate, as these countries decided relatively early to introduce many restrictions that have stopped the spread of the coronavirus. Similarly, in nearby Vietnam [64,65].

In Asian countries with a high proportion of the Muslim religion, one of the reasons for the rapid spread of MERS-CoV (β -coronavirus) is the participation of the faithful in pilgrimages to holy places [66]. The first case of this virus was identified in Saudi Arabia in June 2012. A hospital group with pneumonia among health workers in Jordan was traced. Most of the MERS-CoV cases have been reported in Saudi Arabia, a country hosting two important Muslim pilgrimages: Hajj and Umrah. Hajj takes place in the month of Dhul-Hijjah, the 12th month of the calendar of the Hijra Islamic year. Every adult, healthy Muslim must make a pilgrimage once in his life. The Umrah Pilgrimage is a voluntary minor pilgrimage for Muslims to Mecca, which can take place at any time of the year. Due to the large number of visitors to Saudi Arabia from Muslim countries around the world, in the context of the Hajj and Umrah pilgrimages, these countries are potentially at risk of importing MERS-CoV [67]. Phylogenetic analysis has shown that MERS-CoV defines a new C-lineage, making SARS-CoV-2 the C-line of a β -coronavirus known to infect humans [68]. Since COVID-19, like other β -coronaviruses, can spread by increasing nutrient deficiencies, improving the immune system through vitamin and mineral supplements can act as a defense barrier against COVID-19 invasion. Increasing the intracellular dose of Zn^{2+} can damage the replication of many RNA viruses. Traditional medicine has a wide variety of medicinal plants with known clinical effects that improve the health of SARS-CoV-2 survivors. The aqueous and alcoholic extraction of bioactive compounds from certain herbs and the administration of safe doses to patients during clinical trials may be a newer step in reducing symptoms and improving health [66,67].

14.5.3.2 COVID-19: the case of India

The highest number of COVID-19 victims in Asia was recorded in India (34,968 deaths and 1,583,792 COVID-19 cases increased logarithmically on July 31, 2020) [63]. India has a long COVID-19 story and the biggest panic started when cases were seen in China and Iran. The precautions were slowly taken. Because so far there is no proven vaccine to prevent COVID-19 infection. Hence, in India, as well as throughout Asia, the currently recommended treatments are isolation and symptomatic supportive care. Almost

80% of COVID-19 infections are mild and resolved within a few weeks. About 5% require ICU care, and the mortality rate is 1%–2%. Social distancing is recommended to reduce contact between infected and uninfected people and is currently the most effective means of public health prophylaxis [14]. SARS-CoV-2 collected genomes from various geographic sources, mainly from India, Italy, the United States, Nepal, and Wuhan, to identify significant SARS-CoV-2 genomic traits through integrated analysis. These analyzes include identification of significant mutation signatures, identification of antiviral host miRNAs, and epitope prediction. As a host defense mechanism, the host miRNA repertoire also targets invading viruses. Consistent with the parameters used in the various antiviral miRNA databases to predict the host antiviral miRNA against SARS-CoV-2, the analysis showed unique host miRNAs targeting the Indian SARS-CoV-2 virus genes. The miRNA specific for Indian SARS-CoV-2 did not show significant nucleotide-binding based on complementarity with the SARS-CoV-2 strain from other countries [69].

The diverse tropical and subtropical ecological and environmental conditions in the Indian subcontinent make it difficult for temperature and humidity sensitive respiratory viruses to mass morbidly in a genetically heterogeneous population. Transmission of the virus depends on humidity and temperature; transmission of human influenza viruses by droplet or aerosol from the respiratory tract is easiest in cold and dry conditions [70]. However, despite this, the incidence of SARS-CoV-2 in India is high. Therefore, it is necessary to make the population aware of the risks and effects of this virus. Therefore, Indian governments, through their ministries, organized the most expert-led seminars and trainings (webinars) among Asian countries in order to reach as many people as possible [64].

In India, various folk remedies to prevent colds are also used, such as cinnamon, ginger, cloves, cardamom, sesame oil, poppy seeds, honey, lemon, table salt, eggs, and cottage cheese. Some important herbal remedies used as a cough remedy are *Acacia catechu* (L.f.) Willd. (Mimosaceae), *Acorus calamus* L. (Acoraceae), *Adhatoda vasica* Medic. (Acanthaceae), *Allium sativum* L. (Amaryllidaceae), *Angelica archangelica* L. (Apiaceae), *Astragalus membranaceus* (Fisch.) Bunge (Fabaceae), *Carum copticum* L. (Apiaceae), *Lavandula angustifolia* L. (Lamiaceae), *Lobelia inflata* L. (Campanulaceae), *Salvia officinalis* L. (Lamiaceae), *Sambucus nigra* L. (Caprifoliaceae), *Tussilago farfara* L. (Asteraceae), *Valeriana officinalis* L. (Valerianaceae), *Verbascum thapsus* L. (Scrophulariaceae), and *Zingiber officinale* Rosc. (Zingiberaceae) [71,72].

14.5.4 European countries and the COVID-19 outbreak

There are differences in approaches to combating COVID-19 between European countries. For example, Germany has taken very quick steps, such as testing all citizens for the presence of SARS-CoV-2, providing quarantine or

drugs to fight COVID-19. Cumulative mortality estimates in Europe show the overall normal expected level in EU countries; in Italy, however, there is an increase in excessive mortality. In this document, we refer to data from the European Center for Disease Prevention and Control (ECDC), which publishes daily statistics on the COVID-19 pandemic—not only for Europe but also for the whole world. The number of deaths in recent weeks should be interpreted very carefully because adjustments to delayed registrations are often imprecise. Aggregate analyses are corrected for differences between EU member states and differences in local reporting delays of this type of data. Some wonder why the observed mortality data in COVID-19 affected countries did not show any increased mortality at all. Increased mortality, which may occur primarily at a subnational level or concentrated in smaller age groups, may not be detectable at the national level, even more so in aggregate analysis at the European level. In addition, death registration and death reporting always take several weeks. Therefore, the mortality rates that EuroMOMO [73] shows in recent weeks should be interpreted with some caution. Although increased mortality may not be immediately apparent in statistics, this does not mean that increased mortality does not occur in some areas or age groups, including COVID-19–related mortality [1,73].

In addition to these overwhelming messages, there is also positive news about COVID-19. The SARS-CoV-2 mortality in Central Europe as of January 18 2022 was 350 to over 400 per 100,000 inhabitants [1]. In East Germany, the mortality rate is 1.09, while in West Germany (NRF), the mortality rate is more than three times higher (3.53) [73,74]. The risk of COVID-19 in the general EU/EEA and UK population is currently assessed as follows: low in areas where community transmission has been reduced and/or kept low and where extensive testing is being carried out showing very low detection rates. The risk is moderate in areas where there is significant and continuous transmission to the community and where appropriate measures of physical distance (social distance) are not applied. The risk of COVID-19 to populations with specific factors associated with severe disease is assessed as moderate in areas with reduced community transmission at low levels and very high in areas with significant ongoing community transmission [74]. As per researchers from the New York Institute of Technology (NYIT), the countries without universal programs of *Bacillus Calmette-Guerin* (BCG) vaccination are more badly affected by COVID-19 as compared to countries with universal and long-lasting BCG vaccination programs. The US scientists stated, “The BCG vaccination to protect against tuberculosis is given to millions of children soon after birth, and it could be a turning point in the fight against the COVID-19.” By taking the examples of Italy and the United States, the study from the NYIT states that the extent of COVID-19 influence might be linked to the BCG vaccination given at birth as studies suggest that the BCG vaccine reduces COVID-19 cases. The research is not released anywhere. The researchers from NYIT says that countries like Italy, the Netherland, and the

United States do not have universal policies of BCG vaccination and have been more seriously impacted compared to countries with universal and long-standing BCG policies [75]. In West Germany, where there is a higher standard of living and a higher level of medicine, and more hospitals in East Germany (former East Germany), the situation should be theoretically more favorable to fight SARS-CoV-2. Meanwhile, the opposite is true. This is due to the fact that the inhabitants of the GDR, as well as residents of the former Warsaw Pact countries and the USSR, were subjected to the obligatory BCG vaccination for tuberculosis. Residents of West Germany did not have problems with tuberculosis, so there was no mass vacancy of the population. Thus, it turns out that the tuberculosis vaccine in this case is crucial, because both tuberculosis and SARS-CoV-2 most often affect the lungs [74].

Another comparison is from Europe—Portugal and Spain. With the same climate, the same region, and the same diet and lifestyle, in Spain the mortality rate is 124 people per 1 million inhabitants, while in Portugal it is only 10 people, which is 12 times lower [22]. WHO virologists say that the number of actually infected is at least 5 times higher than the official. Thus, in Italy, about 2% of patients die, in Spain 1.6%, and in Portugal 0.4% [17]. This difference is due to the fact that in Italy the population was vaccinated selectively against tuberculosis; in Spain, the vaccine ceased to apply in 1981. Portugal, on the other hand, had to vaccinate everyone until 2017, i.e., 36 years longer than Spain. Thus, in the territory of Eastern and Central Europe, where vaccination against tuberculosis was mandatory, the mortality rate is much lower. The following countries have no compulsory vaccination for tuberculosis: Australia, Belgium, Denmark, France, Spain, the Netherlands, Luxembourg, West Germany, Slovenia, Switzerland, Great Britain, the United States, and Italy. It was speculated that in the Czech Republic, as well as in Poland, Hungary, Belarus, and Ukraine, the course of the disease should theoretically be much milder. The combination of reduced morbidity and mortality makes BCG vaccination a potential new tool in the fight against COVID-19 [76].

BCG vaccination against tuberculosis will be tested in Europe and Australia to prevent the development of dangerous symptoms of COVID-19. In Australia, 4000 healthcare professionals who deal with COVID-19 patients have applied for the study. Similar studies are already being carried out in the Netherlands, Great Britain, and Greece [77]. If there is good compliance with quarantine and hygiene rules, then the inhabitants of these countries have a chance to defeat SARS-CoV-2 faster.

14.5.4.1 Italy and the COVID-19 outbreak

Italy is the second European country and the third in the world to be affected by SARS-CoV-2 in terms of the number of cases; more than 247,537 people got infected with 35,141 deaths and 199,974 recoveries [78]. Lombardy, the most affected region, counts over 50,455 infected cases and experiences a slow

curve decrease in contrast with Milan, the main region city that is still recording an increase in contagions [78].

Italy has been the first European country to adopt constrain measures, firstly traffic air from/to China was blocked. Italy has announced an emergency program for 6 months and an initial financial support for the population of €5 million has been set. Most of the contagious are in the north of Italy, in Lodigiano, and in Veneto. First restriction policies were addressed to universities and schools that were closed together with theaters and cinemas. All citizens are required to stay at home in isolation and follow an isolation restriction that recommends a 1-meter distance among them and does not allow hugs and handshakes. When first contagious appeared, entries in the red zones (zone considered more contagious) were blocked; income and outflow were not allowed. Initially, the red zone included Lombardy region and provinces as Modena, Parma, Piacenza, Reggio Emilia, Rimini, Pesaro and Urbino, Venice, Padua, Trieste, Asti, Alessandria, Verbanio-Cusio-Ossola, Novara, and Vercelli. Due to the increase of virus contagion, all the countries were declared a red zone, mobilization abroad municipality boundaries were not allowed, more political restrictions were applied, and all firms were closed except firms satisfying primary needs. Only supermarkets, pharmacies, postal, insurance, and financial services were provided and public transport too.

These strong restrictions were impacting the economy of the country and the life of people, especially private activities. COVID-19 reaction strategies are shaped by actual and future strategies enacted by the government and other social and economic actors. Fig. 14.1 presents evidence on how COVID-19 is impacting the country, the future development strategies, and reaction

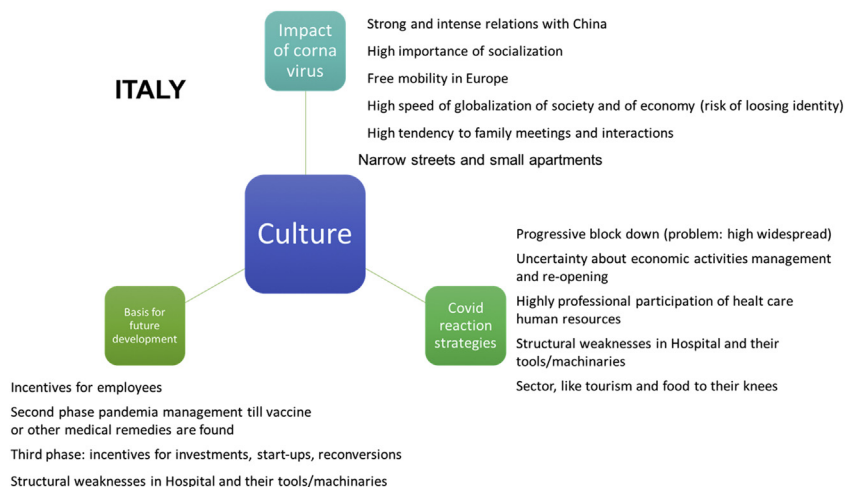


FIGURE 14.1 Factors affecting culture in Italy.

strategies during the acute phase. The epidemic is impacting Italian international relations, as the strong and intense relation that it is experiencing with China. For reasons of solidarity, China has immediately supported Italy airlifting 30 tunnels of medical supplies and a staff of doctors has joined Italian doctors to face the infection. ZTE, the multinational telecommunications equipment and systems company, donated 2000 masks to the city of Aquila where it runs a collaboration with the university; Huawei is setting up a cloud computing network to connect Italian hospitals among themselves and with hospitals in Wuhan [79].

Strong restriction policies affect mobility and transport. Traveling in the country is allowed only for work and health reasons or for primary product purchases. A self-isolation for 14 days is required for people returning to Italy by any means of transport. Transport limitations and isolation policies are affecting positively the sense of belonging to the country; the forced isolation is contributing to creating a strong sense of community among citizens. Although isolation and security distance, families are rediscovering their identity and the utilization of digital devices is a useful tool to reduce the distance and to create a sense of community that goes over the virtual character of the digital dimension. People use digital to maintain their human contacts and not to avoid from real life, but to keep in contact with the world in isolation. In this period, uncertainty is, unfortunately, the constant that is driving the economic activities [80]. From the government side from the central to the regional point of view, the re-opening is now the actual focus since economic forces (i.e., associations of category, national trade union, and entrepreneurial associations) are asking for precise answers since they are re-organizing their way of doing business. Of course, a transversal component of all sectors will be healthcare since new rules will shape the internal activities of each company.

Never as now, the Italian public health system is facing the emergency despite its weakness, first of all shortage of beds and medical equipment as lung ventilators and masks to prevent contagious diseases. To respond to this resource shortage, relevant Italian firms in the production sector have converted their production to support hospitals producing all the equipment necessary, as Lamborghini that is engaged to produce lung ventilators and Armani engaged to produce masks and lab coats for doctors. Another sad weakness that Italian Health system is experiencing is the security of medical staff that is always exposed to virus contagious diseases. The number of doctors died is increasing dramatically [78].

The epidemic obviously has affected the tourism demand, especially the international demand. The hospitality industry forecasts a loss of overnight stay around 126 million and 156 million [81].

A new economic and social shift paradigm, Italy is living like the rest of the world. But of course, this health crisis that is affecting Italy in economic social terms will be an opportunity for future development strategies. Incentives for employees and firms will be provided and the environmental question is always gaining attention from the policymakers that are planning new incentives as ecobonus to influence firms and citizens to use new technological implants that impact less the environment [82].

The reduction of contagious is leading Italy into the second phase of epidemic management characterized by the repeated recurrence of contagious. In this phase, lockdown restrictions will begin to be eased before returning to a normal life. In this phase the country must manage specific issues [83]:

- identifying new cases in a fast way to prevent a new wave of contagion and congestion in hospital structures through home therapies that patients could be requiring using apps;
- evaluating if therapies as the administration of remdesivir and tocilizumab can be effective and therefore administrable in hospitals;
- finding individuals who have antibodies and then can manage how to fight the virus;
- identifying digital tools to track and authorize mobility in the country and mapping all the production firms that can restart the production;
- Italy and the world are experiencing a global crisis that is affecting the world health and economy. Common policies are required to face and prevent future contagious.

In the coming years new contagious diseases are expected and new development and crisis management models must be applied. Crises are always the beginning of a new development.

14.5.5 North American countries and the COVID-19 outbreak

In the Americas, as of July 30, 2020, there are 9,152,173 cases of COVID-19, out of a total of 17,106,007, and 351,121 deaths, out of the worldwide total of 668,910 deaths. This accounts for more than half of the cases worldwide [84].

The United States is currently the country most affected by the coronavirus pandemic worldwide. So far, the number of cases of SARS-CoV-2 infection in this country, as of July 31, 2020, amounted to 3,576,221, including 138,358 fatalities [84]. A record increase in infections during the last 24 h was found in 30 out of 50 American states—most in Arizona, California, Florida, and Texas. If Florida were an independent country, it would be fourth in the ranking of countries with the highest number of infected, after the United States, Brazil, and India [83].

In response to the COVID-19 pandemic, 198 countries/areas/territories have implemented measures that significantly disrupt international traffic, in line with international health regulations (IHR 2005). Only a third of 198 countries have provided public health rationale for these measures, and only a few countries conduct and submit regular risk assessments and reviews of measures. As of July 23, 2020, only 63 countries out of 198 had lifted measures that had been put in place to restrict the international movement of people. As countries consider phasing out or re-introducing restrictions in order to control virus transmission, WHO has published the work “Determinants of public health when resuming international travel” in order to properly inform about national decision-making processes. WHO advises countries to carry out risk assessments of the impact of travel restrictions on the overall public health situation [84]. A multifaceted risk assessment should consider country conditions as well as local epidemiology and transmission patterns, national health measures to control an outbreak, and the capacities of health systems in both countries of departure and destination, including points of entry. They must be proportionate to the risks to public health and should be regularly reassessed and made public. The importance of surveillance, case isolation, contact tracing, and self-monitoring as well as communicating contamination risks and community involvement is emphasized. For this purpose, digital tools and artificial intelligence (AI) can be used [83,84].

In Canada, as of July 31, there were 115,470 cases of COVID-19, and 8917 people have died [84]. The first cases of COVID-19 in Canada were recorded in late January 2020. However, the number of daily new cases only increased in March—the first coronavirus death was confirmed on March 9. Ontario and Quebec, the most populous provinces, have experienced 95% of all deaths from COVID-19 [85]. The isolation and surveillance are important measures to limit the spread of the disease because an infected patient can transmit the disease to others. If a person shows symptoms of the disease, it is recommended that they stay in quarantine at home for 14 days and continue to monitor their health [85].

The IHME project adopted by the United States also assesses social distance and shows the effect of social distance and other measures. The model considers the effects of social distance measures implemented at the “first administrative level” (in the United States this generally means the state level) and assumes further social distance until the end of the modeled period [86]. Social distance measures were classified using the New Zealand Government level 4 alert system, and then it was assumed that locations (regions/countries) that introduced less than three of these measures would introduce the remaining measures within 7 days. It was also assumed that implementation and compliance with these measures was completed. Every time the model is updated, it is assumed that social distancing measures will be fully implemented; any other delays will be reflected in the number of deaths and the burden on hospital systems that the model estimates. The IHME model

suggests that at social distances, the end of the first wave of the epidemic may come in early/end June. Whether there will be a second wave of epidemics will depend on what society and governments do to avoid re-introducing COVID-19 into the population. It is again predicted that by the end of the first wave of the epidemic, around 97% of the US population will still be susceptible to this disease, so measures will need to be taken to avoid a second wave of pandemics before the COVID-19 vaccine is available. Maintaining some necessary means of “social distance” can be supplemented or replaced by national efforts such as mass controls, contact tracking, and selective quarantine. The IHME disease development model is updated daily to reflect the latest data and information, so estimates are likely to change. At present, the forecast, which assumes the continuation of social distance, concerns only the next 4 months and does not provide for the number of deaths if a revival occurs at a later date or if the social distance is not implemented or maintained. It should be added that the data used in IHME forecasts come from local and national governments, as well as hospital networks, such as the University of Washington, the American Hospital Association, and from the WHO and many other sources. This model is constantly updated as newer data are available to provide the most up-to-date planning tool [86]. The forecasts show demand for hospital services, daily and cumulative deaths due to COVID-19, rates of infection and testing, and the impact of social distancing, organized by country and state (for select locations) [84,86].

14.5.5.1 South American countries and the COVID-19 outbreak

Brazil is in second place in the world, after the United States, in terms of the number of COVID-19 cases; as of July 31, it was 2,552,265, and 90,134 people have died [84].

Mexico and Peru have a similar number of cases as of July 31, 2020 (408,449 and 400,683 cases, respectively), but deaths are more than 2 times higher in Mexico (45,361 in Mexico; 18,816 in Peru) [84]. This can be attributed to the different climatic conditions and the greater resilience of the population under severe climatic conditions. Argentina with 178,996 cases and 3311 deaths as of July 31 can be said to be at the beginning of a pandemic, as are other South American countries [84].

Indigenous groups in South America (in Brazil, Colombia, Ecuador, and Peru) are blocking their villages and retreating to their traditional forests and mountain homes, trying to escape the potentially catastrophic threat of SARS-CoV-2. These groups are retreating to their homes when doctors pay attention to the history of the “decimating” disease community by Dan Collins in Lima, Sam Cowie in Sao Paulo, Joe Daniels Parkin in Bogota, and Tom Phillips in Rio de Janeiro. When the number of cases in South America increased to 8000—and many other cases are unlikely to be reported—then indigenous groups in Brazil, Colombia, Ecuador, and Peru began to take steps to protect

themselves from what they call “historical danger.” Natives in the Brazilian national park Xingu, a vast sanctuary on the southern outskirts of the Amazon, where about 6000 people from 16 different tribes live, say that “SARS-CoV-2 can wipe us out.” Xingu leaders are closing roads to the reserve, which is the size of Belgium, and urging local residents to leave it only in case of emergency. Further north, on the Amazon border with Brazil with Colombia and Venezuela, the local municipality, São Gabriel da Cachoeira, was blocked, and all flights and boat traffic were suspended. “This is an extremely sensitive region,” said Marivelton Baré, president of the Negro River local community, about an isolated neighborhood that lies 3 days from Manaus by boat. “The healthcare system is insecure and we have isolated tribes here.”

Such acute behavior is probably due to the fact that highly contagious diseases, such as measles, smallpox, and influenza, have a long history of “decimating” indigenous communities and pose a particular threat to over 100 isolated groups in Brazil. Isolated tribes are at risk of disease from Amazon missionaries. Currently, the big problem is to stop this virus from reaching the villages. “If this virus enters the villages, it will cause massive death,” said their leader Mendonça, while recalling that the people of Panará in Brazil were almost completely murdered in the early 1970s after the dictatorship destroyed their way through their lands. Similar fears also exist throughout the region. The head of a regional network called the Native Amazon River Basin Organization said, “If SARS-CoV-2 reached native populations, the impact would be terrible.” In turn, Díaz Mirabal, a member of the indigenous Kurripako population in Venezuela, added, “Thanks to our community lifestyle, the transmission would be very fast, and the mortality of people would be very high.” In contrast, Segundo Chukipiondo—spokesman for the Peruvian Federation of the Amazon in Peru—said that he called for over 2000 communities he represents to close their borders. However, the first South American community to isolate itself was Tawasap, a 70-member settlement in southern Ecuador, in the Morona-Santiago region. Just a few weeks before, Ecuador’s president Lenin Moreno (at the end of February), who ordered a nationwide blockade, indigenous Shuar leader named Tzamarenda Estalin placed a plaque at the entrance to his town: “No access for health reasons.” Tzamarenda Estalin, 49, said: “We decided to close the door and not let anyone in or out of concern for our people.” This example was followed by 349 other Shuar villages with about 4000 people. Residents said pandemics had already hit them before, such as influenza, measles, and chickenpox, and killed millions of people in Latin America. Recent research indicates that diseases such as smallpox and measles brought by European invaders could eradicate up to 90% of the pre-Columbian population of the Americas, maybe even 55 million from around 60 million people, between the 15th and 17th centuries. He said, “Knowing that we can’t cure because there is no cure, we’ve shut up.” This risk meant that the village would remain closed until at

least May. He also said they did not have masks or alcohol, but they could use medicinal plants to protect themselves [87].

Columbia as of July 31 has more confirmed cases of COVID-19 (276,055) and more deaths (9454) than Argentina [84]. Here too the indigenous communities are also isolating themselves, establishing roadblocks outside their reserves and prohibiting visits to their ancestral lands. About 1.5 million native people from 87 different tribes live in the city of Columbia. The coordinator of the national indigenous organization of Colombia and a member of the Kankuamo people from the Sierra Nevada mountain range on the Caribbean coast said that their community had meetings and decided that the best way to protect it was to return to their ancestral lands [76,87].

In the Amazon, the daily increase in cases and deaths from COVID-19 is a severe blow to indigenous peoples and nationalities [84]. The difficulty in accessing health of Amazonian people requires a coordinated response from States, indigenous organizations, United Nations system agencies, and other partners in international cooperation. Mechanisms of care and support for these populations are needed, the experts indicated. The Pan American Health Organization (PAHO/WHO) considers that a specific diagnosis of health gaps and ways to facilitate access to prevention and health services for populations affected by the COVID-19 pandemic are needed [88]. PAHO can promote collaboration between ministries of health, indigenous organizations, and other organizations that are responding to the pandemic, to develop roadmaps for the response. Other diseases affecting those populations are needed, along with ensuring the implementation of public health measures. The PAHO highlighted the need to consider the implications of traditional medicine in the context of the pandemic. The indigenous organizations from Bolivia, Brazil, Colombia, Ecuador, Peru, and Venezuela, as well as other national, international organizations, and PAHO experts addressed the issues of access to health and vulnerable populations in the context of the current pandemic. These indigenous organizations expressed in July 28, 2020 the need to be heard by national authorities in each of the countries. Another objective of the meeting was to form a coalition to provide the necessary support to COVID-19 among the populations of the Amazon. The organizations COICA and PAHO called to strengthen healthcare services in the Amazon through the provision of human resources, supplies, and medical devices, including tests, as well as through treatments and vaccines when they will be available, with particular emphasis on populations living in voluntary isolation [76,88,89].

14.6 Effects of the SARS-CoV-2

A number of factors are in display contributing, abating, or at the receiving end of COVID-19 pandemic (Fig. 14.2). This section examines some of these factors based on first-hand experiences and supporting literatures.

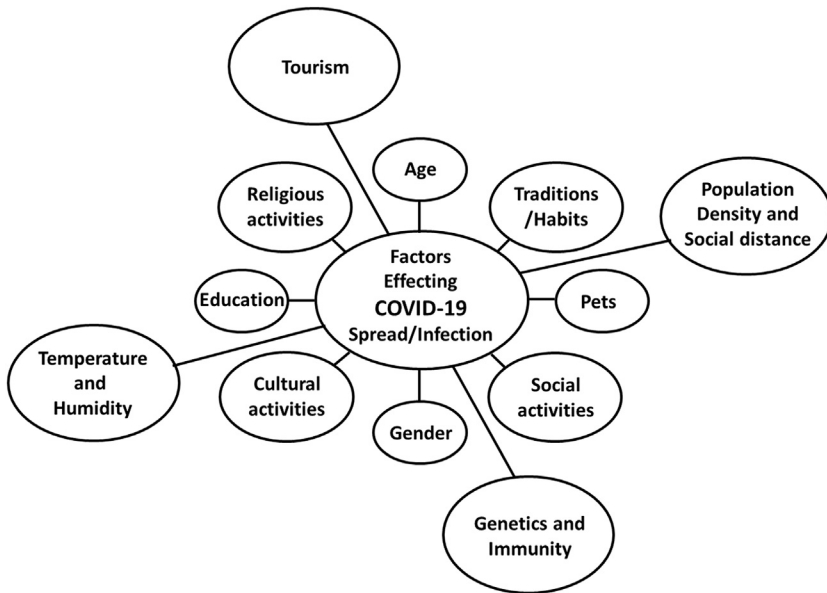


FIGURE 14.2 Factors playing out in COVID-19 global pandemic. Source: Own.

14.6.1 Economic effects of COVID-19

The COVID-19 pandemic is primarily a humanitarian crisis with significant socioeconomic implications. First of all, the likelihood of a recession in 2020 has increased. Of course, economic growth will return when the epidemic is over, but it is possible that the recovery will not be in the shape of a “V” [1,17,84].

The COVID-19 epidemic affects the economy in two ways. Consumer spending is falling as people quarantine and stay at home instead of traveling or visiting malls. The tourism, entertainment, and transport industries will therefore be strongly affected by the epidemic in the short term. For example, a fall in demand for crude oil and a fall in its price. An equally important effect of the epidemic is a negative supply shock, as epidemics reduce the supply of labor. In most cases, temporarily because some employees become ill or remain in quarantine. When production falls, its costs are fixed, and wages must still be paid. Therefore, when debts need to be settled, trouble arises and the risk of bankruptcy increases [17].

According to the World Bank, the costs of a pandemic can be broken down into three categories: approximately 12% of the total costs come from mortality, 28% from employee absenteeism, and 60% from behavioral changes. This means that the coronavirus does not have to be very deadly and have death rates as high as Ebola to be economically expensive. During a pandemic,

all sectors of the economy experience disruptions, which can lead to a shortage of certain commodities, resulting in higher prices. Also, limited economic activity results in lower tax revenues. This happens when the government increases spending, which results in a greater fiscal deficit and public debt. And many governments are already overindebted. An example is Italy, whose public debt is 135% of GDP and is set to increase further [90].

14.6.1.1 The economic effects of the coronavirus

The World Bank estimates that the pandemic could reduce global GDP by up to 4.8% in the worst-case scenario (a pandemic similar to the Spanish flu); by 3.1% in the moderate scenario; and by 0.7% in the mild scenario (the 1968 flu pandemic) [91]. The economic impact of COVID-19 is believed to be much greater than estimated as China's role in the global economy has grown significantly. China now accounts for 19.3% of the world economy. In addition, they have become more closely tied to the rest of the world and a vital part of global supply chains, which can have significant repercussions for multinational companies [17]. Moreover, the COVID-19 pandemic occurred during the economic downturn. The current epidemic is also much larger than the previous one. In the case of SARS, there were 8096 cases in 37 countries, and 17,106,007 people were infected with the coronavirus, and 668,910 died, in 180 countries (data as of July 31, 2020) [84]. This means that the outlook for the global economy in the coming months is not favorable, even if the Middle Kingdom resumes full production and returns to the previous path of economic growth [17].

Contrary to previous epidemics, which most often affected underdeveloped countries (such as Ebola), this time is different. The largest number of infections was recorded in China, Italy, Iran, South Korea, France, Spain, and the United States, i.e., excluding Iran, in the world's largest economies. Together, these countries account for 45% of the world economy in terms of GDP in purchasing power parity [92]. Italy and Japan were on the verge of recession already in the fourth quarter of 2019. Another quarter of negative growth will cause a technical recession in the eighth and third largest economies in the world (in nominal GDP) [90,92].

The US economy looks relatively better. But even it may not have immunity to the coronavirus. Output index (it indicated a decline in economic activity as early as February) and the response of people and authorities to the pandemic, analysts are discussing how severe the recession will be. According to the International Monetary Fund, the global economy grew by just 2.9% in 2019 (the slowest pace since the Great Recession) and just 0.4 percentage points above what is considered recessionary, meaning the world is likely to experience a recession in 2020 [90,92].

In many countries, governments have decided to come to the rescue of the economy. For example, in Malaysia, the government's economic stimulus

package provides RM 100 billion to support enterprises, including small and medium-sized enterprises (SMEs), and RM 2 billion to strengthen the country's economy. The government also allowed a suspension of payments of income tax installments to all SMEs for a period of 3 months [93]. In Italy, companies operating in the tourism, hospitality, sports, transport, and catering industries can benefit from the suspension of nonpayment taxes, such as VAT refunds. The Ministry of Economy and Finance, the Bank of Italy, the Banking Association Italian, and Mediocrities Centrale have established a task force to offer loans to microenterprises, SMEs, professionals, and sole proprietorships. The guarantee fund has been strengthened and extended. The government also adopted measures totaling EUR 7 billion (EUR 3.8 billion), introducing an incentive for the transfer of impaired loans to third parties (EUR 1.1 billion) and suspension of loan repayments entrusted to the debt collector (EUR 0.8 billion). Tax credits for enterprises and the self-employed of 50% of costs incurred, up to EUR 20,000, for sanitary working environments and tools [93]. Africa is already struggling with widespread geopolitical and economic instability [95]. In America, 10 million people lost their jobs within 2 weeks. The numbers are similar in Canada, Europe, South Korea, and many other parts of the world. The word of the year is “supply chain” as people begin to discover how the weak links of global just-in-time supply grow in food, medicine, cars, and high-tech goods. There are huge economic and logistical disruptions around the world. World markets are still collapsing and there is no doubt that we have entered the horizon of the greatest crisis events [94].

The economic crisis caused by the COVID-19 pandemic could lead to extreme poverty of up to 60 million people, according to World Bank experts. To prevent this from happening, a decision was made to support 100 developing countries in the fight against the pandemic. The World Bank has pledged a total of \$190 billion in grants and financial support over 15 months. This is the largest financial aid it has provided so far in its entire history [91].

14.6.2 Social effects of COVID-19

Initially, public health policies and activities did not address the sexual effects of the SARS-CoV-2 (COVID-19) epidemic. However, recognizing the extent of the epidemic and the different effects on women and men is fundamental. It is a step toward understanding the primary and secondary effects of a sudden change in health on different people and communities and to create effective, equitable care, and possible interventions [96]. The evidence is emerging that more men than women die, possibly due to immunological differences such as smoking patterns and prevalence. Data are available by sex, but not complete. Data from the State Council Information Office in China suggest that more than 90% of healthcare workers in Hubei Province are women, stressing the gender of healthcare workers and the risks associated with it, as women, as healthcare workers. Closed schools to control COVID-19 and transmission in

China, Hong Kong, Italy, and South Korea and beyond can have a differentiated impact on women who most often have informal family care, their work, and limited economic opportunities [96].

The main question is, do we need social distance until there is a vaccine? The IHME model adopted in the United States suggests that at a social distance, the end of the first wave of the epidemic may occur in most countries in early June [86]. But whether there will be a second wave of the epidemic will depend on what societies and national governments do to avoid the renewed outbreak of the COVID-19 epidemic in the human population. Therefore, it is anticipated that measures will be needed to avoid a second wave of pandemics before the COVID-19 vaccine is widely available. The maintenance of some measures, the so-called “social distance,” can be strengthened by national, state efforts such as mass controls, contact tracking, and selective quarantine. The media in Europe not only reflects reality, but also creates it. The more and more often information about SARS-CoV-2 is repeated, the more important topic it seems to us. There is an attitude in society that “something” must happen. People buy antibacterial masks and lotions, and some try to make money from it. In a way, people are waiting for the apocalypse and wondering what will happen. Expectations, however, are not confirmed by reality. Above all, there is a hysterical mood, although not much is happening. However, in the case of panic, you can try to influence when the upward wave ends. In such a situation, the media should now first convey a message that is “perhaps too trivial.” “We want people to wash their hands often and thoroughly.” It’s an instruction that everyone understands [96].

The impact of COVID-19 on society is not just spreading and mortality that threaten the whole world. The sad thing is that people lost their loved ones. There are too few mouth masks, medical overalls, accessories, COVID-19 test equipment, breathing devices, body bags, etc. There are also no rescue teams. Death occurs not only because of COVID-19, but also because of comorbidities, hunger, conflicts, suicides, etc. The unemployment rate rose quickly. People have lost their jobs: restaurants, hairdressers, shops, etc. Food is destroyed because transport is blocked and stopped. Meanwhile, food and everyday necessities are lacking in many places. Some special tasks, such as medical services, are underinvested or overworked. Political leaders get sick and die. This is the largest financial burden for each country since World War II. This is the most difficult period of challenges for all government leaders. This pandemic has also changed international relations forever. A huge number of deaths, fear, debts, etc., break historical records. Extinct cities with no traffic, no people. For every family, group, community, and country, there is time to cooperate in defense of COVID-19 as during the war. There should now be a high level of alertness and awareness for everyone about COVID-19.

The world is seeking preventive and therapeutic solutions against the spread, and effects, of the new SARS-CoV-2. India should examine the ways

in which its base of traditional medicine systems can participate. Allopathic drugs of unknown efficacy are being tried to treat COVID-19; the same courtesy should be extended to herbal preparations such as nilavembu kudineer in Siddha and a chimera's concoction of the Unani medicinal system with plausible mechanisms of action and with fewer side effects [97].

It is also hoped that the pandemic will also have some positive long-term effects and raise public awareness. First, the epidemic should highlight the key role of hygiene for public health in the modern world. Second, the pandemic shows the failure of the National Health Service in many countries. Third, the cancellation of school hours prompts reflection on the role of compulsory education in today's world. The biggest problem with school closures is not the lack of lessons, but the fact that parents will have to look after their children. Fourth, once the quarantine has passed, with government and academia encouraging online work and learning, politicians and employers may finally look at it and understand that in a modern economy it is not always necessary to stamp a work card. Fully productive work, including teaching students, is possible at a distance. This observation may lead to a greater flexibility of the labor market and to the development of distance learning. Fifth, the pandemic shows how important it is to save—both private and public—for rainy days. Sixth, the epidemic should also make people and businesses aware of the need to diversify. It is about sources of supply. The problem for many companies was that they relied on one Asian supplier.

14.6.3 Ethical effects of COVID-19

The Ethics Subcommittee of the Advisory Committee of the Director of the Centers for Disease Control and Prevention (CDC) deals with ethical issues such as:

- prioritizing the distribution of vaccines and antiviral drugs,
- developing interventions that would restrict individual freedom and create social distancing (in the flu pandemic discourse, often referred to as non-pharmaceutical interventions),
- providing legal protection for service providers who, in a situation of public health emergency, may be asked to provide services outside their normal scope of duties or to conduct interventions that have not yet been scientifically confirmed.

As in many other areas of community or society decision-making, these ethical issues are often encountered in decision-making. The decision-making process, including the framework and reasoning that supports the ethical choice, may not be clearly defined. The proposed guidelines have been fully tested by those involved in the flu pandemic planning and response process.

Using them, guidelines have been established for decision-makers at all levels—federal, local, state, tribal, etc.—and they should continue to make the best judgment in certain situations [27,98].

SARS-CoV-2 pandemic planning, like other public and social health activities, is a shared responsibility that balances community and individual interests. During a pandemic, society can be at risk. Our global moral tradition understands that the suspension of some (but not all) ordinary moral principles in such circumstances may be ethically acceptable (or even ethically compulsory). For example, restrictions on individual freedom or choice may be necessary to protect both individuals and entire communities during pandemic flu. However, individual freedom should be restricted with extreme caution and only when an alternative approach to the goal of surviving a pandemic is unlikely to be effective [17,27].

The main principles for determining restrictions on citizens' freedom during the SARS-CoV-2 threat are to adopt the least restrictive practices that will protect the common good and to ensure that restrictions are necessary and proportionate to the need for protection.

Effort should be made to ensure that people affected by restrictions receive community support, e.g., job security, financial support for people and their families, providing food and other needs to isolated or quarantined persons, and/or protection against stigma or unreasonable disclosure of private information [27].

14.6.3.1 Diversity in ethical decision-making

Given the many examples of use abuse of individuals, especially those who are particularly vulnerable to Sars-Cov2 infection, in the interests of the public, public health officials should recognize and adequately respond to distrust of the healthcare system. This confirmation is of course part of a much broader dialogue on healthcare. Resolving this distrust should be a strong and lasting commitment and not just be seen as a tool for persuading people to follow the recommendations. Various public voices should be involved in determining the need for restrictions and articulating the ethical justification for these restrictions [98].

14.6.3.2 Approach to a fair trial (procedural justice)

An approach to justice is recommended that focuses on the procedures to be followed, hoping that good procedures will lead to fair results. And these are elements of the correct approach to procedural justice:

- Consistency in applying standards to people and time (treating similar cases).

- Policymakers should be impartial and neutral.
- Ensure that those affected by the decisions have a say in making decisions and agree in advance to the proposed process.
- Treatment of people affected by judgment (punishment) with dignity and respect.
- Ensure that decisions are properly reasoned and based on accurate information.
- Communication and processes that are clear, transparent, and without hidden programs.
- Including processes to change or correct approaches to new information, including appeals processes or procedures that are permanent and feasible [16].

International human rights law guarantees every citizen the right to the highest level of health possible and obliges all governments to take all steps to prevent public health threats and provide medical care to all citizens who need it. This law also recognizes that in the face of serious threats to public health and in various crises in society that threaten the life of the entire nation/nations, temporary restrictions on certain rights may be justified when they have a documented legal basis. They are necessary but must be based on scientific evidence and they should not be arbitrary or discriminatory in application. Their duration should be limited until the end of the epidemic or cataclysm. Such a right should be proportionate to achieving the goal of respecting human dignity and should be reviewed [16,19]. Meanwhile, SARS-CoV-2 Acts, adopted in many countries that are becoming law, often have serious consequences for the rights of disabled people and the elderly (e.g., a law recently adopted in the United Kingdom), and their implementation should be carefully monitored among citizens to protect their rights to healthcare, education, freedom, and other human rights [16].

14.7 Interprofessional education and collaborative practice

At a time when the whole world is struggling with COVID-19 and a shortage of health service workers, strategies are being sought that can help develop programs to support global health performance at work. The framework of interprofessional education and cooperation practices emphasize the current status of interbranch cooperation around the world, mechanisms for team collaboration should be identified, and a series of actions should be outlined to ensure an efficient strategy to service sick patients [99].

14.7.1 Cultural effects of COVID-19

Life in a pandemic has made a huge difference in every area. People working in a culture whose work involves direct human contact or audience gathering has been completely disrupted [100,101]. The production of many content, such as films, series, theatrical performances, music concerts, etc., has been halted. At the same time, however, restriction of mobility and job opportunities freed up additional time resources for a large part of society. This in turn means that digitally delivered entertainment and culture has never been as desirable as it is now. While the popularity of video games, esports, and streaming is increasing, the music sector is losing money in the face of the pandemic. Despite the transition to digital distribution of recordings and its growing market share, the revenues of music artists and artists are mainly based on concert activities, and this has been completely stopped. It is difficult to estimate potential losses now, but experts are talking about billions of dollars in live performances alone [101]. The lack of mass events is also a loss for cities for which popular festivals can be a valuable source of income. Even music streaming services are less popular, although this change seems to be exaggerated by media reports. It has clearly changed when we use streaming. Although festivals can attract a large audience, the question is whether the music world should go a step further in terms of online interaction. The Luck Reunion festival, which featured big stars, was transformed into an online charity event with 2.5 million viewers [101,102].

The results of research on people's attitude to the crisis situation caused by the SARS-CoV-2 pandemic, carried out in Poland, show that 47%–85% of people pay attention to frequent hand washing, avoiding personal contact with other people, avoiding leaving home, and avoiding human gatherings, e.g., in supermarkets. Taking dietary supplements (33%) and eating natural antioxidants in the form of vegetables and fruits (30%) are much less popular, while wearing masks in public places (5%) is poor [100]. Research results on a population of 1000 respondents regarding the behavior of Europeans toward the need to perform employee duties show the majority (51%) understand the need to continue work, 21% of people work remotely, and there is 6% of childcare allowance [57].

14.7.2 Possibility of using AI in detecting and in the fight of SARS-CoV-2

In the age of pandemics, first of all, awareness of ecological problems should be raised, because AI methods can be used in the technical review of research into the treatment of many diseases, including COVID-19. Six days before January 6, 2020, CDC warning about an influenza epidemic in China, and 9 days before the WHO (January 9, 2020) notification, an AI platform had already detected and sent a SARS-CoV-2 outbreak warning. BlueDot, a global

health monitoring platform based in Canada, has notified its clients about the outbreak on December 31. The AI BlueDot algorithm analyzes all global information reports, animal and plant disease networks, and flight ticket data and all official announcements anticipating and detecting potential epidemics [103]. AI can cover various aspects of analyzing and applying knowledge to approach many problems. Tortoriello et al. [104] emphasize that, as with group filtering (CF) methodologies, which include a type-based approach, user data and ratings are used to calculate the probability between users or items.

As a result, AI has been used in a wide range of applications. In the case of social problems, such as observation or disease control or route planning, intelligent algorithms support people's decisions to make a more informed choice or highlight important information. In the case of medicine, AI ensures that logical choices are made and credible responses to the environment and pathogens are made. For example, in the event of a SARS-CoV-2 outbreak, the BlueDot algorithm probably used information about airline tickets to accurately predict the rapid spread of the virus from Wuhan, China, Bangkok, Seoul, Taipei, or Tokyo. The BlueDot algorithm uses machine learning and natural language processing technology to detect signs of potential outbreaks based on the information collected. Then epidemiologists check and verify AI's findings before sending the report to the company's clients in government, industry, and in the public health department and other public health officials, airlines, and public hospitals in affected regions [105].

Many AI algorithms can alert people to an outbreak and allow time to resolve the situation. Data on infected patients from around the world can be analyzed using powerful AI algorithms. Based on historical analysis of big data using Bayesian learning and other learning algorithms, it is possible to predict which people may be COVID-19 patients [106,107]. AI can also scan human behavior and warn of an outbreak using data from social media. It also provides recommendations for government agencies and administrators on what steps can be taken in relation to time [103]. AI not only warns but is also starting to direct scientists to develop drugs and vaccines to treat patients based on their response to treatment methods. For example, the Government of India has announced that it has innovative ideas to develop machinery/products/processes to control COVID-19. Thanks to AI, you can use robots to care for patients or make robots useful for guiding people in hospitals to avoid crowding. AI can remind us when we come across a patient [107,108]. Students from Bangalore, India, have developed drones that can detect COVID-19 over an area of 50 cubic meters. A genetic algorithm or any AI optimization system can be used to optimize hospital management, making the schedule effective to reduce the risk of spreading COVID-19. AI can also help measure inside and outside temperature by diagnosing COVID-19 infections from chest X-ray scans. Using machine learning algorithms, it is possible to predict the spread of a virus on the basis of its behavior in the environment and on the surface [109]. AI systems can be useful in various medical procedures, e.g., disinfecting hospital areas using cleaning robots, these and other domains can be helpful in controlling COVID-19 [106,109].

14.8 Conclusion

In the planning and creation of COVID-19 pandemic influenza remedy, the involvement of different people, from various social organizations and institutions is necessary. A transparent decision-making procedure is primarily necessary. In addition to governmental organizations, those who must be involved in this process are responsible for implementing pandemic plans (e.g., the direct health of healthcare providers who would be asked to provide care even in the face of personal risk or competing needs of their own families). There should be a balance between centralized national control and regional and local communities through effective implementation of general guidelines (presumptions in favor of decisions taken during a pandemic). This process should be particularly considered in order not to marginalize communities and those values that should consider sensitivity to cultural, racial, religious, or other values. It will be necessary to implement social distance and to test and isolate cases to manage the spread of the disease.

In connection with the change and tightening of the “SARS-CoV-2” law in many countries, special attention should be paid to respect for citizens, especially national minorities. Hence, it is necessary to protect freedom of expression and ensure access to critical information; make sure that quarantines, blockades, and travel bans comply with legal standards; persons in detention and institutions should be protected; ensure the protection of healthcare professionals; strictly observe the right to education, even if schools or universities are temporarily closed; women’s equality must be ensured in order to address the disproportionate impact and burden imposed on women and girls; eradicate discrimination and stigma; and strongly protect patient confidentiality. Marginal populations should be guaranteed access to healthcare without discrimination; social and civil society organizations should be protected; and rights to water and sanitation be promoted and ensured. It is very important to ensure the continuity of humanitarian aid and to target economic relief so as to help low-wage workers as much as possible.

Care by governments and the experience and conviction of healthcare professionals are factors that can affect compliance with the quarantine protocol. Strengthening social norms and moral values during quarantine depends on societies and their development. Timely, transparent quarantine and proper information about compliance reports can improve compliance. In addition, governments should provide sufficient food, medicine, and other essentials. In the fight against the COVID-19, AI can be used, not only to predict the development of the disease but also to detect temperature, disinfecting activities, sharing data from various regions to fight disinformation, and many other activities replacing people to combat COVID-19.

List of abbreviations

- AI** Artificial intelligence
COVID-19 Coronavirus disease 2019
EPA Environmental Protection Agency
IHME Institute for Health Metrics and Evaluation
MERS-CoV Middle East respiratory syndrome coronavirus
MHC Major histocompatibility complex
miRNAs MicroRNAs
PAHO Pan American Health Organization
SARS-CoV-2 Severe acute respiratory syndrome coronavirus 2
WHO World Health Organization

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