



# Post-COVID-19 precautions based on lessons learned from past pandemics: a review

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## Abstract

**Aim** In view of the spread of the contagious coronavirus disease (COVID-19) globally, the present review focuses on the details of past pandemic diseases, along with comparisons and lessons learned. A general awareness of COVID-19 infection is addressed, and it is compared with the Spanish flu pandemic. Based on the successes, failures and lessons learned in the past, governmental efforts must be undertaken to empower citizens by providing accurate information and implementing post-COVID-19 precautions that need to be taken now to stop the spread and recurrence of the virus locally, and to restore health and economic normalcy.

**Methods** A detailed literature survey of past pandemics is undertaken in order to extract the successes, failures and lessons learned from previous breakouts. The comparison of past pandemics will enable us to determine post-COVID-19 precautions that should be followed. Separate tables are prepared to highlight the lessons learned and measures to be taken. Both general precautions and preventive measures for pregnant women are compiled.

**Results** The literature shows a continuous struggle of humans with disease outbreaks, with the most adverse impact of the Spanish flu killing 20–50 million people. Precautions need to be taken including social distancing, compulsory mask-wearing, avoiding public gatherings and washing hands regularly. The lessons from earlier pandemics show that they were equally devastating, and vaccines were not available at the time of outbreaks. Vaccines developed for polio, H1N1, measles, and other viral diseases have proven to save countless lives. Living with COVID-19 and evolving the work culture of protecting oneself and protecting others also has to be adopted.

**Conclusions** COVID-19 has become an everyday topic of discussion throughout the world, indicating the increasing number of COVID-19 cases, deaths and recoveries. The lessons learned from past pandemics such as social distancing, wearing masks, avoiding public gatherings and adherence to guidelines, along with personal hygiene, are the key measures that must be taken in order to live with COVID-19. Precautions for the elderly and pregnant women advised by medical authorities are to be strictly adhered to. These will help in reducing COVID-19 cases and in turn will reduce the pressure on hospitals to serve those in need. India has learned lessons from the past and the present pandemic and will move towards growth through its self-reliance.

**Keywords** COVID-19 · Spanish flu · Pandemics · HIV/AIDS · Social distancing · Severe acute respiratory syndrome

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## Introduction

Since the birth of civilisation, humans have experienced health issues due to changes in the quality of panch maha tatvas, i.e. Bhoomi (earth), Jal (water), Akash (sky), Agni (fire) and vayu (air), which adversely affect human health or well-being (Pevey et al. 2017). It has been written in the Vedas that these pancha tatvas have to be used and maintained in their purest state (Ahluwalia 2013). From the Antonine period until today, civilisations have lived with epidemics and pandemics, causing panic among people, who could only turn to for prayer for protection, causing economic destruction, and

highlighting human mortality (Benedictow 2005; Scheidel 2017). Epidemics have regional effects whereas pandemics have worldwide effects of disease spread. The history of virology dates back to the identification of the first virus, the tobacco mosaic virus, in 1892 (Lecoq 2001; Nicklin et al. 2002), and has evolved since then with continuous development in virology studies using highly sophisticated microscopes (Baveja 2018; Pelczar et al. 1993). Nevertheless, governmental efforts are ongoing to improve the study of virology and microbiology in India, which is gaining in significance with the use of a multidisciplinary/integrated approach (Heymann et al. 2001) for developing vaccines and administering them to people for surveillance (<http://www.who.int/csr/response/publication/surveillance/plague.pdf> accessed on 25 May 2020). The effects of viral diseases like HIV/AIDS and other communicable diseases (Rashid et al. 2016; Davey 2016) and the subject of biology and microbiology have entered technical institutions (Mann 2012; Vale and Dell 2009), with a priority to be taught in all engineering courses to engender an understanding of social and healthy living.

## World history of pandemics

The very first pandemic, based on the available literature, was the Antonine plague in 165 AD, and the most recent is coronavirus disease of 2019 (COVID-19). Pandemics presented chronologically include the Antonine plague (165 AD), Plague of Justinian (541–542 AD), Black Death (1346–1353), third cholera pandemic (1852–860) (<http://www.cbc.ca/news/technology/cholera-s-seven-panemics-1.758504> accessed on 15 June 2020), flu pandemic (1889–1890), sixth cholera pandemic (1910–1911) (Collins 1996; Robert 1954), flu pandemic/Spanish flu (1918) (Wever and Van Bergen 2014), Asian flu (1956–1958), flu pandemic (1968), Hong Kong flu (1981) (<http://content.time.com/time/specials/packages/completelist/025969,2027479.00> accessed on 15 June 2020), SARS (2002–2003), HIV/AIDS pandemic (2005–2012), swine flu (2009–2010), Ebola (2014–2016), MERS-CoV (2015), and COVID-19, an RNA virus disease. Each of these pandemics was a threat to mankind (Reid et al. 2004; Raj et al. 2020) and created panic in the absence of a vaccine at the time of the outbreak. The COVID-19 outbreak spread rapidly, claiming 2462 lives and infecting 78,811 just in the first month (Chowdhury et al. 2020), and the rate of mutation of the virus is higher than that of a DNA virus (Raj et al. 2020). In light of the current deadly pandemic, it was felt that a brief review of past pandemics was needed. A detailed list of the world's pandemics and their outbreak periods, number of deaths and countries affected, along with lessons learned from these outbreaks, is presented in Table 1. The spread of COVID-19 infection in persons around the globe has occurred at an alarming rate, with the World Health Organization (WHO) declaring it a public

health emergency in January 2020 (Anonymous 2020; Kalthe and Rajabi 2020; Velavan and Meyer 2020). The world becomes a global village when it comes to surveillance of occurrence and recurrence of pandemic or endemic infectious disease (Heymann et al. 2001; Grein et al. 2000).

## Indian scenario

India has witnessed in the recent past large outbreaks of emerging and re-emerging infectious diseases that have ravaged the resource-limited country (Robert 1959; David 1986; Suri and Sen 2011; Dikid et al. 2013). After successfully containing deadly outbreaks of Nipah virus and other high-threat pathogens, and building on the success in eliminating polio, India is now readying itself to address the threat of an influenza pandemic. The Ministry of Health and Family Welfare (MoHFW) and WHO jointly hosted a gathering of leading experts from the fields of public health, virology, epidemiology, surveillance, clinical medicine, One Health, disaster management, behavioural science, risk communication and the defence sector to identify and address challenges that India would face during an influenza pandemic (WHO Report 2014; Swetha et al. 2019).

The study of microbiology, and especially virology, is time-consuming, with many steps involved. The isolation, identification, preservation, characterisation, screening of antimicrobial activity (Parija 2016, and studying the behaviour of viruses in different laboratory conditions is both challenging and risky (Earnest Gould 1999). The challenges in developing new generations of vaccines are substantial at the levels of basic biology and efficacy. The greater challenges, however, arise when introducing vaccines to the public (Rauch et al. 2018). Communities at large will resist any change in the natural system. For example, when family planning was introduced, people had misconceptions regarding different methods (Khan 1980). Similarly, acceptance of the polio vaccine by the population took several months before it became a routine procedure to eradicate polio (Chowdhary et al. 2011). There were continuous struggles for HIV/AIDS programs in India to bring about changes in public attitudes (Satyajeet and Pramanik 2009). It is not uncommon for India to experience sudden and rapid outbreaks of epidemics and pandemics. Studies have reported that outbreaks in developing countries are caused by malnutrition, lack of sanitation and proper public health systems, and unavailability of ready-made vaccines (Ergunay 2014; Rice et al. 2000; John et al. 2011; Sivabakya and Srinivas 2020). It is also a sad truth that India will have to be ready to face several more such outbreaks in the days to come (Mishra 2015). Thus, preparedness has to be given immense importance, and control of spread should be the number one priority of the government, doctors and other health care workers, and the general public.

**Table 1** Worst global pandemics, cause of transmission, countries involved, and lessons learned/measures to follow

Name of pandemic/period	Cause of transmission/deaths	Countries	Lessons learned/measures to follow
Antonine plague 165 AD	Unknown/5 million	Anatolia, Egypt, Greece, Italy	Believed to be outbreak of smallpox, appearance of boils sounds like smallpox/no treatment
Plague of Justinian 541–542 AD	Bubonic plague/25 million	Constantinople, Eastern Mediterranean	Flea/insect control/sanitation of ports/ships Overall personal hygiene; bacterial infection <i>Yersinia pestis</i> transmitted through fleas
Black Death 1346–1353	Bubonic plague/75–200 million	Asia, Africa, Europe	Carried by fleas Recurrence until twentieth century
Third cholera pandemic 1852–1860	Cholera/contaminated water/1 million	India, Asia, Europe, North America, Africa	<i>Vibrio cholerae</i> contaminated water Treatment of water/daily monitoring of water quality parameters
Flu pandemic 1889–1890	Influenza A virus/H2N2/H3N3/1 million	Central Asia, Canada, Greenland	Bed rest; ample fluids; nourishing food; treatment through alcohol to quinine, salicylates
Sixth cholera pandemic 1910–1911	Cholera/800,000	Middle East, North Africa, Eastern Europe, Russia	Transmitted through water contaminated with faeces and food; disinfection of water; separating water supply lines from human sewage; care for infants
Flu pandemic/Spanish flu 1918–1919	Influenza/20–50 million	Europe, Australia, Africa, North America	Social distancing; wearing masks; avoid public gatherings; care for health care workers, nurses, doctors, etc.; community spread measures; quarantine; isolation; economy
Asian flu 1956–1958	Influenza/H2N2/2 million	China, Singapore, Hong Kong, USA	Infections in children from schools; deadly to pregnant women and elderly with existing lung and heart diseases; economy
Flu pandemic/Hong Kong flu 1968	Influenza/H2N2/1 million	Hong Kong, Singapore, Vietnam/Philippines, India, Australia, Europe, USA	Human-to-human transmission Social distancing; isolation; treatment with ample fluids; nutritional food; economy
HIV/AIDS pandemic 2005–2012	HIV/AIDS/36 million	Africa, globally 131 countries	Social distancing; no heterogeneous sex; use of condoms; personal hygiene; challenge of bringing awareness; still existing; economic pressure on developing countries
COVID-19 pandemic 2019–2020	Coronavirus 2019/500,000 as of 12/5/2020, 613213 as of 21/07/2020	China, Europe, USA, South America, Africa, Gulf countries, Russia	Characteristics of virus are changing Fast-spreading; symptoms appear after 6 to 7 days Preparedness; decision-making Social distancing; masks; separate elderly from children No public gatherings Learn to live with it with full precautions

Source: WHO Reports (2010, 2020); Jordan and Robert (2011); Shanks (2015); Gupta et al. (2017); Jamison et al. (2006); Kempínska and Woźniak (2013); Mourya et al (2019); [http://www.infoplease.com/cig/dangerous-disease-epidemics/bublonic\\_plague.html](http://www.infoplease.com/cig/dangerous-disease-epidemics/bublonic_plague.html) accessed on 16 June 2020; <http://www.mpholine.org/worst-pandemics-in-history> accessed on 25/May 2020

### Post-coronavirus effects

The novel coronavirus COVID-19 that originated in Wuhan, China (Zhou et al. 2020; Chowdhury et al. 2020) is showing

its severity in the form of new human-to-human transmission (Bhattacharya et al. 2020) and has now become a global concern (Hassan et al. 2020; Mothay and Ramesh 2020; Yaseen et al. 2020). The present COVID-19 pandemic, with its first case

**Table 2** Characteristics of SARS-CoV-2 (COVID-19)

Origin	Wuhan, China; suspected to be from bats
Type of virus	RNA virus; obligate parasite
Flow of information	RNA-DNA-RNA
Transmission	Human-to-human; nosocomial; eyes
Incubation period	2–14 days
Symptoms	Fever; scratchy throat; dry cough; shortness of breath; breathing difficulties

SARS severe acute respiratory syndrome

Source: Yaseen et al. (2020), Chowdhury et al. (2020)

reported in India on 30 January 2020, has a severity in terms of attacking the respiratory system (Table 2), especially in persons aged 50 and above.

A total of 15,099,458/1,194, 888 and 619,605/28,771 cases of infection/deaths have been reported worldwide and in India, respectively, as of 03/07/2020 (<https://www.worldometers.info/coronavirus> accesses on 22 May 2020). The infection continues to spread due to its contagious nature (Lessler et al. 2009), with the path of human-to-human transmission through respiratory droplets (WHO 2020) and variable incubation time for symptoms to appear (Hawker et al. 2008). Another prevalent issue is that COVID-19 features are similar to those of common influenza viruses causing colds. The most common feature of common influenza viruses is seasonality, which implies that influenza caused by viruses increases during colder temperatures, and then subsides with warming of the air temperature. By analysing the data up to 7 March 2020 and by considering more than 80 locations comprising a number of confirmed cases and location-specific meteorological data, we showed that the spread of the virus is strongly dependent on the temperature and UV index (Nair and Neel 2020; Gunthe et al. 2020).

There is a long way to go before we will be able to say that COVID-19 is completely eradicated (Islam et al. 2020). People may have to live with it for some time and resist infection by following strict guidelines of social distancing and hygiene, as too great an economic imbalance (Nicola et al. 2020) will pose many other problems such as increased poverty (Balaji and Sravendra 2020), death due to hunger and malnutrition, and increased numbers of homeless (Banerjee and Bhattacharya 2020). From a business point of view, the retooling of production with new policies of safe social distancing and fewer workers will pose different challenges (Dasgupta and De 2020; Ramteke 2020). The phased lifting of restrictions on people's travel to work is also a concern (Page 2020). Disruptions in the academic setting at institutions of higher learning and difficulties in conducting online classes affect the educational system (Singh 2020), and rural students without available Internet facilities are deprived of their learning. In addition, the transfer of people who are stranded due to the lockdown and additional administrative responsibilities are placed on government officers for control and movement of the public, such as issuance of passes and maintaining law and order (Khanna et al. 2020).

With great disruption and number of deaths ranging from 20 to 50 million, the Spanish flu (1918–1919) that occurred over 100 years ago appeared in three successive waves. Therefore, particular emphasis was given to reviewing the literature on the Spanish flu to understand the lessons learned.

The first established cases in the history of the so-called Spanish flu occurred on 4 March 1918, and within a span of 21 days, 1000 soldiers were infected with the fever (Phillips 2014; Mercer 2014; Tsoucalas et al. 2015). In Europe, the

disease spread through France, Great Britain, Italy and Spain, causing havoc with military efforts in the First World War. In May, the flu spread to North Africa and Bombay, India, in June to China, and in July to Australia (Radusin 2012a; Krammer et al. 2018). The second wave spread from North America to Central and South America, and from Freetown, West Africa to South Africa and the Horn of Africa in November 2019. The flu had spread to almost all of Europe, Poland and Russia, northern Asia, India and China (Radusin 2012b). The third wave of the Spanish flu hit Australia in December 1918, New York in January 1919, Paris and Japan in December 1919, and ended in January 1920 (Taubenberger and Morens 2006; Martin et al. 2019; Tsoucalas et al. 2015).

COVID 19 has shown initial signs of recurrence in Wuhan, China, and infections are occurring in other countries at an alarming rate, with few countries showing a decreasing number of cases. Therefore, living with COVID-19 while taking the utmost precautions must be given the highest priority to draw a balance between the economy and health.

### Integrated approach to fighting COVID-19

Simultaneously undertaking a technological, social and legislative approach proved to be successful in flattening the curve of positive cases and deaths during the first 100 days of the pandemic. The steps taken by the government of India include (1) the 'Janata Curfew' 14 March 2020, (2) lockdown from 24 March to 14 April 2020, and (3) continued lockdown from 15 April to 3 May 2020 (Mandal et al. 2020).

The Ministry of Family Welfare of the Government of India has set forth guidance for fighting COVID-19. The strategy involves establishing three types of facilities: fever clinic/COVID care centre (CCC), dedicated COVID health centre (DCHC) and dedicated COVID hospital (DCH). The roles played by these centres and facilities are presented in detail in Table 3.

**Plasma technology** Plasma technology is now being considered as an alternative. Blood is collected from a person who has recovered from COVID-19. Separation of serum and screening is done for virus-neutralising antibodies. Convalescent serum, rich in antibodies for the pathogen, is then administered to a COVID-19 patient, who thus acquires passive immunity (Ivan et al. 2011; Duan et al. 2020; Bethany and Mc Cullough 2020; Paital et al. 2020; Singhal 2020).

India is known for its millets throughout the world, and the nutrition they provide is of great significance to human immune system growth (Sarkar et al. 2015). Millets (more recently known as nutri-cereals) are nutritionally superior to major cereals (wheat and rice) for carbohydrates and energy, and serve as a good source of protein, high dietary fibre, vitamins, minerals, antioxidants and micronutrients, as VA

**Table 3** Guidance document on appropriate management of suspect/confirmed cases of COVID-19

Types of COVID-19-dedicated facility	Functions/care	Human resources and transport facilities	Mapped to
COVID care centre (CCC): Hostel, hotel, school, lodge, etc. Separate rooms for suspected and non-COVID-19 patients	Temperature, respiration, oxygen level and other symptoms Mild and very mild cases and COVID-19 suspected cases: treatment	Doctors, nurses with makeshift personal protective equipment (PPE) Basic life support ambulance (BLSA)	DCHC DCH
Dedicated COVID-19 health centre (DCHC): Private hospital with separate entry/exit/zones	Suspected cases with moderate symptoms: treatment Symptoms worsen from moderate to severe: transfer the patient to DCH	Doctors and nurses/attendants with makeshift PPE Beds with oxygen support Basic life support ambulance	DCH
Dedicated COVID-19 hospital (DCH): Full hospital with separate entry/exit/zones separate rooms for confirmed/suspected cases	To deal Severe Clinically assigned as severe	Doctors/nurses/attendants with makeshift PPE Intensive care unit with ventilators/beds with assured oxygen supply	DCHC DCH

Source: Ministry of Health and Family Welfare 2020 Government of India

Tonapi, Director of the IIMR-ICAR, has noted (The Hindu Business Line dated 28/04/2020).

General post COVID-19 guidelines and precautions for pregnant women, mothers and their newborns during and after the pandemic are presented in Table 4.

People have to choose to live like the ancient Indians lived, with cultural distancing and behaviour, while also working to build the economy through new frontiers in engineering, technology, medicine and agriculture, with continuous research on virology. The country must be ready to face any kind of situation and medical emergency. The production of indigenously developed ventilators, homemade masks, etc., along with governmental efforts to increase the capacity of hospitals and doctors, should be given priority. The COVID-19 pandemic can be viewed as a crisis opportunity for the development of India.

**Other preventive medicines**

**Ashwagandha** The properties of the ayurvedic herb ashwagandha have ‘therapeutic and preventive value’ against

COVID-19 infection, researchers of IIT-Delhi have found, in collaboration with Japan’s National Institute of Advanced Industrial Science and Technology (AIST). The researchers, led by Professor D. Sundar from the DBT-AIST International Laboratory for Advanced Biomedicine (DAILAB), said their study had been accepted for publication in the *Journal of Biomolecular Structure and Dynamics*, and was likely to be published soon, according to *The Indian Express*, Tuesday, 19 May 2020.

In a recent positive development, the Ministry of Ayush, in collaboration with the Council of Scientific and Industrial Research (CSIR), has started clinical trials testing formulations of four important Ayurvedic herbs in fighting the novel coronavirus. The medicines under study include ashwagandha, guduchi, yasthimadhu, peepli, and another formulated drug, ‘Ayush 64’ (<https://www.ayush.gov.in/>).

The trials, which will first be carried out among health workers, will be initially conducted in high-risk zones identified by the Arogya Setu application. It is reported that over 50

**Table 4** Post-COVID-19 general guidelines and precautions for pregnant women, mothers and their newborns during and after the pandemic

Protection against infection	Pregnant women, new mothers and babies	Newborn care
Avoid close contact	Avoid crowded places	Baby and mother together
Avoid touching mouth and nose	Avoid caring for confirmed cases	Support breastfeeding
Wash hands	Avoid caretakers with respiratory syndrome	Minimum contact with health workers
Avoid crowded places	Give vaccination to pregnant women	Screening facilities for visitors
Air flow through windows	Protect infants from viral infection	Limit visitors
Adequate sleep	Wash hands	Child handling procedure
Eating nutritious food	Keep environment clean	Vaccinations
Staying physically active	Use masks	Consult child specialist
	Keep newborn close to mother	Limit visitors at home
Always to be under medical supervision		

Source: WHO Reports (2007, 2009a, b, c, 2010)

lakh people from cities including Delhi, Mumbai, Ahmedabad and Pune will be a part of the clinical trial. The Ayush ministry is also studying the impacts of Ayush-based prophylactic interventions in some preventive cases. In the first phase, patients are likely to be administered ashwagandha, and later the other drugs will be given to patients, depending on how they react or the severity of the symptoms (Times of [India.com](http://India.com) 12 May 2020).

The Ayush Ministry has recommended homeopathy and Unani medicines as effective in the prevention of COVID-19. As reported by the Economic Times Healthworld.com on 19 January 2020, the Central Council for Research in Homeopathy (CRRH) suggested that Arsenicum album 30 could be taken on an empty stomach daily for 3 days as a prophylactic medicine against COVID-19 infection. The dose should be repeated after 1 month if cases of COVID-19 are prevalent in the community.

The Ayush Ministry and MoHFW suggested good personal hygiene practices including wearing of masks, avoiding public gatherings, washing hands with soap for at least 20 seconds, avoiding touching the nose, eyes and mouth with unwashed hands, and avoiding close contact with people who are sick, as also advocated by WHO 2020.

Sanders et al. 2020 reported that the COVID-19 pandemic caused by the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) presents an unprecedented challenge in identifying effective drugs for prevention and treatment. Given the rapid pace of scientific discovery and clinical data generated by the large number of people rapidly infected by SARS-CoV-2, clinicians need accurate evidence regarding effective medical treatments for this infection.

No proven effective therapies for this virus currently exist. The rapidly expanding knowledge regarding SARS-CoV-2 virology provides a significant number of potential drug targets. The most promising therapy is remdesivir (Amirian and Levy 2020). Remdesivir has shown potent in vitro activity against SARS-CoV-2, but it is not yet approved for this indication by the US Food and Drug Administration and is currently being tested in ongoing randomised trials. Oseltamivir has not been shown to have efficacy (Muralidharan et al. 2020), and corticosteroids are currently not recommended. Current clinical evidence does not support stopping angiotensin-converting enzyme inhibitors or angiotensin receptor blockers in patients with COVID-19 (Patel and Verma 2020). The following four treatments are commonly advised to be given to all COVID-19 patients to boost general immunity: (1) vitamin C in warm water with half a lemon at regular intervals, (2) balls of dry ginger, jaggery and ghee three times a day, (3) turmeric in hot water (acts as an anti-coronavirus agent), (4) steam treatment at least once a day (Bucher and White 2016; WHO Coronavirus 2020; <http://www.nanavatihospital.org> accessed on 22 May 2020; [http://www.thehindubusinessline.com/economy/agri-business/strong-immunity-is-a-key-weapon-in-the-fight-](http://www.thehindubusinessline.com/economy/agri-business/strong-immunity-is-a-key-weapon-in-the-fight-against-Covid-19/article_31453126.ece)

[against-Covid-19/article\\_31453126.ece](http://www.thehindubusinessline.com/economy/agri-business/strong-immunity-is-a-key-weapon-in-the-fight-against-Covid-19/article_31453126.ece) accessed on 16 May 2020).

Israel is advocating the separation of the elderly and children to minimise the spread of COVID-19, whereas 6 feet social distancing is being specified by the WHO 2020. China's success comes from a complete lockdown of Wuhan. India, on the frontline, took an early decision to flatten the disease curve and engaged in generating as much awareness as possible in both urban and rural areas, before slowly opening up the economy. Angela Betsaida B. Laguipo, a registered nurse writing in News Medical Life Sciences, reported on lessons learned from the Italian COVID-19 outbreak, including the impact of COVID-19 on the regional and national healthcare infrastructure (<http://www.news-medical.net/medical/authors/angela-betsaida-laguipo> accessed on 28 May 2020). Included in the study are recommendations based on the experiences of doctors, nurses and healthcare personnel in managing patients in the country (<https://www.news-medical.net/news/> 22 June 2020). The team highlighted the key elements needed in the clinical management of the viral infection, including safe oxygen therapy, airway management, personal protective equipment and non-technical aspects of patient care.

Alex Shankland, a research fellow, in his opinion piece 'Lessons from Brazil for the global response to COVID-19' published by the Institute of Development Studies on 25 March 2020, notes the strengths on which Brazil's health and social protection systems can draw in enabling responses to the COVID-19 pandemic to avoid worsening existing health inequities (<http://www.ids.ac.uk/openions/lessons-from-brazil-for-the-global-response-to-Covid-19/> accessed on 28 May 2020). These include the depth and breadth of the country's community-based primary care network, the national coverage of cash transfer schemes such as Bolsa Família, and the innovative institutional arrangements that have enabled state, civil society and private sector actors to coordinate responses to previous epidemics (<https://www.ids.ac.uk/opinions/lessons-from-brazil-for-the-global-response-to-covid-19/>).

There is great experience in every country as far as the fight against COVID-19 is concerned. A combined effort to collect all these experiences and lessons learned from almost 213 countries will be a resource for future preparedness in terms of medical infrastructure, handling of quarantine centres, COVID-19 care centres, COVID-19 care hospitals, medicines, personal care equipment, movable infrastructure, masks for frontline workers and working people, guidelines for social distancing, doctors, nurses, Asha village health workers, maintenance personnel and legislative support. The most important is people's participation in all health care programs and strict adherence to guidelines (Vanita 2020).

Amidst the spread of COVID-19 and its devastating effects on populations worldwide, and with the economies of most countries in a recession, it is now a global challenge for all countries to focus on balancing health and economic

concerns, as they both affect the prosperity and well-being of society. People have to understand the situation and fully cooperate with the government and COVID-19 warriors who have been working tirelessly from day one. Let us end this review by acknowledging the respect that is due every individual who is contributing to the fight against COVID-19, and hope to see all activity return to normal, and the world as a global village will be in peace.

## Conclusions

COVID-19 has become an everyday topic of discussion throughout the world, indicating the increased number of COVID-19 cases, deaths and recoveries. The lessons learned from past pandemics including social distancing, wearing masks, avoiding public gatherings and following guidelines, along with one's own personal hygiene, are the key points to living with COVID-19. The precautions for the elderly and pregnant women as per the medical authorities are to be strictly adhered to. These will help to reduce COVID-19 cases and in turn reduce the pressure on hospitals to serve those in need. India has learned lessons from the past and present pandemic and will move towards growth through its self-reliance.

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## Compliance with ethical standards

**Ethical statement** The authors declare that no ethical approval was necessary for this research work.

**Conflict of interest** The authors declare that they have no conflict of interest.

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