Journal of Medical Care Research and Review
Received 12 Oct 2021 | Revised 15 Nov 2021 | Accepted 15 Dec 2021 | Published Online 24 Jan 2022

DOI: https://doi.org/10.52845/MCRR/2021-5-1-1
JMCRR 5 (1), 1167–1179 (2022)
ISSN (O) 2589-8949 | (P) 2589-8930 IF:1.6

ORIGINAL ARTICLE

Progressive Response of India against the Global Pandemic (COVID-19) Positive Impact and Challenging Responses: A Systematic Review

Dr. Jyoti Upadhyay[1*] | Dr. Shraddha Arya[2]

[1]Head of Department, School of Study in Sociology and Social Work, Vikram University Ujjain, Madhya Pradesh

[2]Head of Department, Social Work, Balkavi Bairagi Mahavidhyalaya, Neemuch, Madhya Pradesh

Abstract

A new strain of coronavirus named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has overwhelmed the world with its rapid spread and high number of cases. SARS-CoV-2 causes COVID-19 disease which may present with mild, moderate, or severe illness. In severe cases, pneumonia, acute respiratory distress syndrome, sepsis, and septic shock can occur. Individuals above 60 years and people with preexisting comorbidities are at higher risk for developing serious complications. The incubation period of this new pathogen ranges from 1 to 14 days and there is no preexisting immunity to the disease. Countries across the globe have adopted various prevention and control measures to minimize negative health impacts. India has adopted various public health measures which include social distancing measures, nationwide lockdown to reduce risk of exposure, widespread IEC messaging regarding hand-washing, usage of masks, and recommending avoidance of unnecessary travel to combat the spread of disease. This manuscript reviews the global situation, contextualizes India's disease control efforts, and outlines the possible way forward by identifying specific actions under the following headings: enhancing district preparedness, enabling care for patients, and broadening community and stakeholder engagement for India. The major gears of those behavior changes were the enforcement by the government, fear, motivation (self and induced), and self-experiences or realizations with time. If those changes are fitted in the Trans-Theoretical Model, Indian people have passed through the "Pre-Contemplation" to "Action" stage of behavior changes during different phases of this pandemic. Frequent hand hygiene, maintaining physical distancing, use of face mask, cough etiquettes, avoid greetings through physical contacts, fear in spitting and urination at public places, refrain from gatherings and avoiding outside food are some of the examples of those appropriate behaviors which were enforced or learnt during the COVID pandemic.

Keywords: Covid-19 Pandemic, Democracy, Crisis, Government Roles, Public Health, Public Opinion, Faith in government.

1 | INTRODUCTION

On 30 January 2020, World Health Organization (WHO) declared the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) epidemics, a Public Health Emergency of International Concern (WHO 2020). SARS-CoV-2, which is also named as coronavirus disease 2019 (COVID-19), is a novel and highly contagion virus that belongs to the family of "Nidovirus" which includes "Roiniviridae", "Artieviridae" and "Coronavirdae" family, causing respiratory illness in humans with symptoms such as common cold and fever to more acute diseases like and Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS) (De Wit et al. 2016; Din and Boppana 2020; Arora et al. 2020). The coronavirus is an envelope positive sense single-stranded RNA virus whose genome is mainly comprised of nearly 30,000 nucleotides with genome size varied in between 26 and 36 kb, and its replication and transcription depend on the replicase gene which encodes two overlapping polyproteins, pp1a and pp1ab.[1,2] The whole-genome level of coronavirus is 96% match with a bat coronavirus.[1] The diameter of coronavirus ranges from 60 to 140 nm with club-shaped spikes forming a crown-like structure on its surface under an electron microscope, hence the name given coronavirus.[3] On 11 March 2020, WHO declared the outbreak of COVID-19 a pandemic because of its worldwide spread and severe impact on the human population. The cause of the disease outbreak is still unknown, but it was first detected on 30 December 2019, in Wuhan, Hubei province of China, as a local outbreak of pneumonia cases due to some unknown cause.[4] Although the outbreak was likely to be associated with the large seafood market leading to a zoonotic transmission event, soon it became clear that human-to-human transmission was occurring at an extensive rate. With the 2 months of the outbreak, the pandemic spread throughout the world with an alarming speed. As of 1 March 2020, 87,137 confirmed cases and 2,997 deaths had been reported globally by the WHO due to COVID- 19 (WHO 2020a), and it affected 58 countries (WHO 2020a). The number of infected patients and deaths caused by this pandemic is on a constant rise across the globe, and it has also caused a major shock to an already fragile global economy (Rajput et al. 2020). Coronavirus is a "communicable" disease, and its spread all over the world is entirely associated with human-to-human transmission rather than transmission through the air. However, the transmission of coronavirus through airborne spread (i.e., from aerosol particles, particulates matter etc.) has also been believed to be the source of transmission.[5,6] Due to its small size, it can enter the body via droplets from mouth or nose during close and unprotected contact between an infector and infectee. It has also been observed that coronavirus-infected people develop symptoms and signs, including mild respiratory illness, fever, dry cough and tiredness, with a mean incubation period of 5 days, which can also range up to 14 days (WHO 2020b). Predominantly, the disease presentation can also range from no symptoms (asymptomatic) to severe pneumonia and even death (WHO 2020b). Recent studies showed that the number of infected individuals with the novel COVID-19 may get double every 7 days and each person could spread this virus to 2.2–3.58 persons on an average.[7] The individuals $\geq$ 60 years of age and with chronic underlying health conditions are at a greater risk of being infected with COVID-19 compared to the children who might have less probability to get infected or, if so, these children may show mild symptoms or may have asymptomatic infection.[8] Practicing hand (with alcohol-based gel or sanitizer) and respiratory hygiene and maintaining physical distance of at least 3 feet (1 m) are the best way to protect yourself and others from the novel COVID-19 (WHO 2020b). In an interim guidance report by WHO, wearing a proper mask is also a preventive measure that could reduce the spread of various respiratory viruses, including COVID-19 (WHO 2020c). Importantly, the use of masks alone does not offer enough protection, and thus, it should be combined with protective measures Such as hand hygiene and physical distancing. Currently, the respiratory face masks that are being used worldwide include, N95 (India code), KF94 (South Korea code), KN95 (China code) and FFP2 (EU code, including the UK). Generally, all these respirable face masks are the same as they stop 95% of droplets and viruses > 0.3 microns in size (Fig. 1). Figure 1 shows that wearing masks could forbid the

entrance of various respirable particles, including the COVID-19 virus (encapsulated in water droplets), and could help to reduce the spread of COVID-19 through transmission of droplets from sneezing, coughing and fluids from infected peoples to others. The diameter of water droplets containing infectious virus could range from 0.5 (with a float time of 21 h–21 days in the air) to 100 microns (with a float time of 6 s in the air) (Robertson 2020; CDCP 2020; Gupta et al. 2020). Besides, cleaning surfaces with an alcohol-based disinfectant is also important to stop the COVID-19 spread as it can survive on the surfaces such as copper (up to 4 h), stainless steel and plastic (~ 72 h) and cardboard (~ 24 h) (WHO 2020b). Some of the countries have adopted the early isolation of infected patients and quarantine policies to prevent the transmission from the travelers who have returned from the COVID-19-infected countries.[9] As of 1 June 2020, there is no antiviral medicine and no vaccine to treat COVID-19 (WHO 2020b).

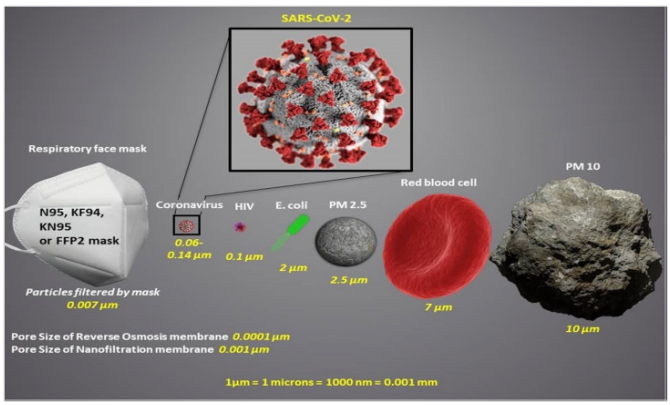

FIGURE 1: Size reference chart of COVID-19 (Source: MoHFW, GOI and SARS-CoV-2 image from Centre for Disease Control and Prevention)

Supplementary information The online version of this article (https://doi.org/10.52845/MCRR/2021-5-1-1) contains supplementary material, which is available to authorized users.

Corresponding Author: *Dr. Jyoti Upadhyay*
Head of Department, School of Study in Sociology and Social Work, Vikram University Ujjain, Madhya Pradesh

Since democratic countries are more open to the world, they should be more vulnerable through many channels of human interactions such as trade, migration and tourism, but may also be more competitive dealing with some of the consequences of the infection. This paper discusses the complex relationship between democracy and the COVID-19 pandemic including reverse causation and presents a variety of democracy measures for a comparative econometric analysis. Our empirical findings suggest that various democracy measures suggested in the literature are positively related to infection rates even when estimates include proper control variables. However, the relationship between the case fatality rate and democracy variables is negative, suggesting a higher value of life in democratic countries. Media censorship has a possible moderating effect on infections and seems to contain mortality.[10]

Democracy and the pandemic: A review of insights

The spread and impact of COVID-19 are quite diverse across countries, caused by differences in geographic conditions, health systems, the stringency of the responses, and the physical and economic distance to China. The performance of political and economic institutions may also contribute to this, which causes people to question the ability of liberal democracies to protect their citizens.[10] An autocratic government may act faster and stronger than a democratic one. They may also mobilize resources more quickly without considering the effect of this reallocation on election results or country's further situation. People may also follow political instructions in autocratic countries more closely than those in liberal states. However, autocratic regimes may suffer from a lack of transparency and over-stringent responses.[11] For example, censoring facts about the pandemic may lead people to become incautious. Therefore, control over media and disinformation can make these countries more vulnerable to a pandemic. Furthermore, they can also cause serious problems in their battle against the pandemic due to corruption, lack of a developed civil society, and inequality in accessing resources.[11]

We argue that the variation between democracies is not simply the result of pandemic-related factors

such as the epidemiological situation of a country or its health care capacity, but the strength of democratic institutions influences how democracies handle the democratic trade-off. We expect governments to be more reluctant to opt for restrictive policies that touch upon fundamental rights and core principles of democracy if democratic safeguards are strong. Decision-makers might anticipate that other political and societal actors can question the legitimacy and proportionality of the measures and hold them accountable for their actions once the pandemic is over. Thus, we argue that the degree to which democratic principles are protected and respected in a country during 'normal' times explains the government's willingness to constrain the freedom of individuals and to limit institutional cheques and balances when confronted with COVID-19.[12]

Air pollution in India is severe and has an adverse impact on human health causing more than 3,50,000 new cases of childhood asthma and 16,000 premature death every year.[19] This is due to the presence of NO2 and particulate matter in the range of 2.5–10 μm diameter in the air generated from fossil fuel burning and primarily from the transport sector in India. Due to lockdown, air flight, and every possible mode of trans- portation, along with industries, which are the primary sources of air pollution were ceased. Hence an improved air quality was visible. [20,21]

Probably environment is the only sector that got an immensely positive impact form this COVID-19 scenario.[22] International energy agency reported that global coal use was 8% lower in the first quarter in 2020. This Fig. 2 shows the Copernicus Sentinel-5P satellite of India before and after lock-down and also the previous year. A considerable amount of reduction in nitrogen dioxide concentrations reduction was observed. Delhi and Mumbai had a 40–50% NO2 emission reduction compared to the previous year. The electricity consumption level declined by up to 9.2% while vital industrial states Tamil Nadu and Maharashtra faced a 5% reduction in electricity consumption during the end of March 2020. Several cities in Gujarat (Ahmedabad, Rajkot, Vadodara, and Surat) are equipped with power plants, transportation, outdoor waste incineration, construction, and brick kilns resulting poor air quality, also recorded a 30% power consumption decline due to lock-down. [23,24] along with a 34–75% reduction of particulate matter, SO2, NO2, and CO, was between which enhanced the air quality index [92]. In India, coal-fired power generation was 15% less in March and 30% less in April [93]. Except for two units at Dadri Power Plant, all other coal-based power plants within a 300 km radius of Delhi (Haryana, Punjab, and Uttar Pradesh) were shut down due to low demand. Because of the locked down in March, total fossil fuel consumption reduced to 18% compared to last year's March.[19] The first phase-locked down showed that air quality particularly the reduction of NO2. Delhi the capital of India which experienced air quality index up to 900, now air quality index below 20, because of the absence of 11 million registered cars from the road. The reduction of PM 2.5 was alarming in Delhi. [25] Dwarka river basin of Eastern India is highly polluted because of stone quarrying and crushing. During the lockdown period, it was found that the maximum PM10 concentration reduced from 278 μg/m3 (pre lockdown) to 50–60 μg/m3 after 18 days of the lockdown in that area. An improvement in the quality of the Yamuna river (concentrations of pH, EC, dissolved oxygen, biological oxygen demand, and chemical oxygen demand reduced by 1–10%, 33–66%, 51%, 45–90%, and 33–82% respectively) was also observed due to the shutting down of the Delhi-NCR industries, which mostly discharged the wastes and the toxic effluents into the river (vice-chairman of Delhi Jal Board Raghav Chadha. S). [26] The surface temperature was reduced by 3–5 C while the noise level dropped to <65dBA from above 85dBA [96]. Further, water quality of river Ganga was also improved during lockdown conditions. [27] Critically endangered, South Asian River Ganges Dolphins also were spotted back in the Ganga river after 30 years. Tens of thousands of flamingos have gathered in the city of Navi Mumbai. The birds normally migrate to the area every year, but residents have reported that this year they have seen a massive increase in their numbers. The Uttarakhand Pollution Control Board also reported that the Water from Har-ki-Pauri in Haridwar is 'fit for drinking after chlorination', which is due to the absence of industrial drainage waste into the river. [28]

Women, care responsibilities, and COVID-19

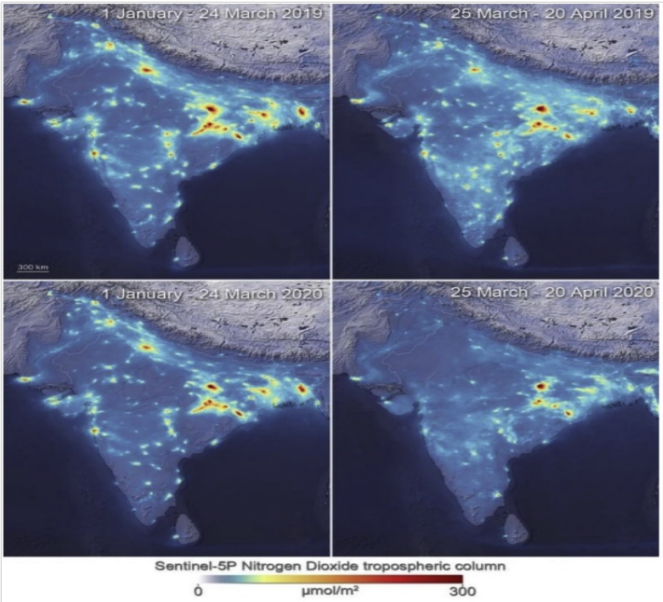

FIGURE 2: Nitrogen dioxide emission before and after a lockdown in India. [23]

Women's caring responsibilities outside the home

Women are playing a key role in the health care response to the COVID-19 crisis. Women constitute an estimated two-thirds of the health workforce worldwide, and while globally they are under-represented among physicians, dentists and pharmacists, they make up around 85% of nurses and midwives in the104 countries for which data are available. [29] In OECD countries, almost half of doctors are now women. [30] Women also make up the overwhelming majority of the long-term care (LTC) workforce– just over 90%, on average across OECD countries. Despite the fact that the majority of the healthcare workforce is female, women still make up only a minority of senior or leadership positions in health. [29]

All health and social care workers are facing exceptional demands through the crisis, but the strain is likely to be particularly acute for women care workers. Confinement measures and school and childcare facility closures will increase the demand for unpaid work at home (see below), much of which traditionally falls on women. An additional complication is that many care workers are either choosing or are required to isolate when out of work, to minimize the possibility of passing the infection to family members. In these circumstances, it is likely to be difficult, if not impossible, for many women health and social care workers to fulfill both their professional responsibilities and their roles as unpaid workers at home.

Health care workers are facing considerable risks. One particular concern is that the ageing of the physician workforce – over one-third of all doctors in countries are over 55 years of age, exacerbates the high risks that medical staff are already facing. The reports so far on the deaths of doctors (GPs or hospital physicians) due to COVID-19 in India has tended to be doctors/professional either in their later years of service or those who have responded to a call to return. The health status of the predominantly female long-term care workforce also raises concerns. Given the elevated risks faced by the elderly and those with underlying conditions, long-term care workers have an exceptionally important role to play through the crisis. However, even before the crisis hit, the LTC workforce suffered disproportionately from health problems: on average, more than half (60%) of LTC workers suffer from physical risk factors and 44% from mental health problems. Given the high risks to LTC patients and the associated stress amplified by the crisis, the LTC workforce will be challenged to the full in carrying out their jobs.[31]

Women's caring responsibilities at home

Not only do women dominate employment in the care sector, they also provide most unpaid work at home. Across the OECD on average, at just over four hours per day, women systematically spend around 2 hours per day more on unpaid work than men. Gender gaps in unpaid work are largest in India (2.5- 4.5 hours) and Turkey (4 hours per day), where traditional norms on gender roles prevail. However, even in Denmark, Norway and Sweden – countries that express strong and progressive attitudes towards gender equality – gender gaps in unpaid work still amount to about one hour per day. Gender gaps in unpaid work are often larger in developing and emerging economies.

Much of women's unpaid work time is spent on child care. women spend, on average, slightly over 35 minutes each day on childcare activities – more than double the amount of time spent on childcare ac-

tivities by men (15 minutes). But many women also provide care for adult relatives, especially parents, even when employed.

COVID-19 will amplify women's unpaid work burdens. For example, the widespread closure of schools and childcare facilities will not only increase the amount of time that parents must spend on childcare and child supervision, but also force many to supervise or lead home schooling. Much of this additional burden is likely to fall on women. Similarly, any increases in time spent in the home due to confinement are likely to lead to increased routine housework, including cooking and cleaning. Fulfilling these demands will be difficult for many parents, especially for those that are required to continue working.

Women, employment, income, and COVID-19

The spread of COVID-19 represents not just a public health crisis, but also an economic crisis. The global economy is in greater danger than at any time since the 2008 financial crisis. The spread of the virus has interrupted international supply chains, and is forcing workers to remain at home because they are quarantined, sick or subject to lockdowns. Companies from a variety of industries are finding themselves forced to interrupt and scale down operations.

Evidence from past economic and health crises suggests that shocks on the scale of the COVID-19 pandemic often impact men and women differently.[32] The 2008 financial crisis, for instance, was characterised by greater job losses in male-dominated sectors (notably construction and manufacturing) and an increase in hours worked by women, especially in the early yea. [33] During the recovery phase, men's employment improved more quickly than women's employment.

However, evidence from infectious disease-driven economic crises often point to sharper effects on women. For example, evidence from the West African Ebola outbreak in 2014-15 suggests that women suffered more through the crisis, in part because their roles as caregivers led to higher infections rates for women and in part because the types of jobs more often done by women (in this case, as workers in the retail trade, in hospitality and in tourism) were harder hit by the economic contraction. Inadequate public attention to the gendered effects of the Ebola crisis, as well as insufficient attention paid to public policies supporting women during these times, has spurred calls for a more focused look at gender disparities during such health crises. [34]

India's helping hand to the world

India is not only protecting its own citizens but also global citizens. Various humanitarian acts of India in recent times which shows that India is genuinely concerned for all the individuals across the globe. India recently created a "COVID-19 Emergency Fund" and donated US$10 million to be utilized by SAARC countries. Early April, India has also exported a huge consignment of 35.82 lakh tablets of hydroxychloroquine to the US.

Convalescent-plasma therapy in India

ICMR, the top Indian health research organization has recently given its approval on 10 April 2020 to the Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST) for carrying out the plasma therapy in COVID-19 patients. Internationally, this therapy has gained fame based on success during previous coronavirus outbreaks. FDA also has given its emergency use authorization as a potential therapy against COVID-19.

Indian Citizens: Time to share the responsibly during COVID-19 pandemic

While majority of the nationals have come up in support of Indian government's move and are doing their bit in maintaining social distancing and following law and orders. However, time and again, random reports of unauthorized religious meetings, spreading of rumors, people fleeing the quarantine centers and hiding travel history, organizing unnecessary vacation trips is creating a setback for the government to achieve the desired milestones. There are very basic expectations from Indian nationals at this moment of health crisis: Staying indoors and practicing social distancing, following standard health hygiene guidelines like frequent washing of hands, covering face while coughing, and maintaining self-quarantine if developing dry cough, fever, and fatigue. Also, patients with cancer, pregnant women, and old patients with multiple comorbidities need special care as studies available so far have conveyed that once caught, these patients deteriorate rapidly.[35–38]

Stages of Behavior Changes in India During COVID-19 As Per Trans-Theoretical Model [39]

In this initial phase of the pandemic, people were in the "Pre-Contemplation stage" of behavior. Many explanations were quoted for not intending to change the behavior like: COVID-19 won't affect India because it is a warm country, it only affects people above the age of 60 years, it infects only non-vegetarian people, etc. [40] From March onwards, the cases started increasing and people intended to start the healthy behavior in the foreseeable future but were quite ambivalent in this direction (Contemplation stage). To raise awareness and seed the behavior changes as the future preparedness measure, the Prime Minister (PM) of India requested to observe "Janta Curfew" on March 22nd, 2020. He also requested the citizens to applaud for 5 min. on the same day for health professionals and frontline workers for their relentless hard work during this pandemic. Many people took the pledge for it and observed it very nicely. [41] This was the time when Indians started to enter into the "Preparation/Determination" stage of behaviour change. A National Lockdown was declared in India on March 24th, 2020, and all 1.3 billion people were forced to stay inside their homes. This was the biggest and most severe action undertaken by any country so far. The unbending yet generous efforts of police played an important role in the strict implementation of this regulation. To show the nation's collective resolve and solidarity, the PM requested citizens to lighten the lamps on April 5th, 2020. Millions of Indians responded to this appeal and displayed a collective spirit in the fight against COVID-19. This motivational effort gave a boost to practice the desired behavior by the people (Action phase). Subsequently, the national lockdown was extended with different regulations and relaxations.

COVID-19 Appropriate Behaviour in India

Hand Hygiene

Though hand hygiene is the simplest, least expensive, and most important means of reducing transmission of infection, it has remained an undervalued approach. Its significance was conceptualized in the early 19th century.[42] the major illnesses that are transmitted through unwashed hands are gastrointestinal, respiratory, skin, and eye infection. It has been proved through a meta-analysis of intervention studies that hand hygiene can reduce up to 31% (19–42%) of gastrointestinal illness and up to 21% (5–34%) of respiratory illness. [43] during this pandemic, hand hygiene emerged to be an effective health promotional strategy. Adoption of this behavior can be a milestone in reducing many other respiratory and gastrointestinal infections in the future.

Physical distancing

Maintaining physical distancing is important against contracting the respiratory infection, particularly for the prevention of community transmission or in settings where community transmission has recently been established. [44] Its effectiveness has been proved by sound scientific literature. [45] GoI enforced the implementation of physical distancing measures through various means like: marking circles in public places, installing barricades, using an umbrella, putting rope or barriers/objects, etc., In some of the hospitals, robots were being used to deliver medicine and food to COVID patients. The government has also reinforced this behavior change by making it compulsory in almost all the circulars/orders. If this behavior is sustained, it can be a panacea in the reduction of many respiratory infections.

Face masks

Masks were conventionally recognized as part of a doctor's dress

Both N95 mask and the triple layered surgical masks have been found to be equally effective in controlled and hospital settings against viral particles. [46] Wearing masks and hand hygiene by the general public has been shown to decrease the proportion of various respiratory viruses during the SARS epidemic. [47] In the wake of deficiency of medical masks, the general public was recommended to use cloth masks. During this pandemic, wearing the mask by almost all the people globally will be remembered as history. Mask has the potential to prevent many respiratory infections besides COVID-19.

Cough etiquettes

Effectiveness of cough etiquette in disrupting the transmission of respiratory infections is a proven fact.[48] Respiratory hygiene is also critical to maintaining a healthy environment. During this pan-

demic, GoI promoted respiratory hygiene through various IEC materials. It has also been proven that awareness is an important predictor of following respiratory hygiene. [49] So, it is required to maintain active and effective public campaigns about respiratory hygiene/cough etiquette to sustain such behavior.

"Good Bye" to handshake

It is scientifically proven that "Namaste" and "Smile" are better than any other way of greetings by touch in reducing the transmission of infection. [50] In this pandemic, people are politely declining to extend their hand to greet. It gave a window of opportunity to catch up with the Indian way of greeting "Namaste," a practice that has been in vogue for decades. This has stood up as a decent way of greeting even in the western world.

No spitting at public places

Aversion of bad practices is equally important. Union Health Ministry in India has made spitting at public places, a punishable offence under the Disaster Management Act to contain COVID-19. [51] The Ministry also requested all the states to restrict the use and spitting of smokeless tobacco in public places by people to prevent the spread of COVID-19.[52] Accordingly, many states like Delhi and Odisha legally banned spitting and urination at public places. [53,54] Enforcement laws against such unhygienic practices have potential to change the behavior of people and would not only reduce disease transmission but also improve the environment aesthetically.

Avoiding gatherings and crowded places

GoI directed all the states in India not to allow any religious or social gatherings. [55] The health of people attending gatherings may be at risk from several unanticipated circumstances, and outbreaks of diseases are one of them. [56] So, avoiding such gatherings and crowded places is important to halt the risk of spreading infectious diseases.

Understand the difference between "Need" and "Want"

Saving money is one of the common resolutions everyone made on the verge of the New Year. This pandemic allowed people to save money by avoiding unnecessary expenditures. The lockdown also taught them an important financial lesson; that buy things only when you "need" and not when you "want." [57]

Avoid outside food

The cultural shift had made people habitual to eat outside the home frequently, which is significantly associated with NCDs. [58] A combination of lockdown with fear of corona forced people to avoid outside food and enjoy cooking and liking towards home-cooked food. If this positive behavior change is sustained (along with physical activity), it can help in reduction in the incidence of NCDs.

Understand the importance self-sufficiency

Local production has proved a definite survival strategy during this pandemic. Greater control over health and safety, reduction of waste, and quick turnover are some of the important benefits of local production. [59] The Prime Minister of India also highlighted the importance of local manufacturing, markets and supply chains, and requested to become "vocal for local" and help to make them global.

Work–life balance

The lockdowns forced people to adopt the "work-from-home" strategy. Initially, people were quite uncomfortable with this, but gradually they became acclimatized. Working from home not only increases productivity but also improves the mental health of employees. [60,61] This strategy made it clear that most of the professional jobs have a certain amount of work that can be done remotely. In this way, people learnt the work–life balance in a more applied way.

Understand the importance of social media

In the initial period of the pandemic, people were circulating information without verifying its authenticity, which created several myths about the disease. [62] So, the cyber-crime portal of the Ministry of Home Affairs, GoI had to release an advisory with legal provisions. [63] In this line, WhatsApp and Facebook imposed additional restrictions on the frequency of message sharing. These efforts drove people to change their behavior toward the rational use of these platforms.

Understand the importance of technology

Technology has proved as a growth factor during COVID-19. To make people aware of real-time updates and true information, GoI came out with track-

ers and dashboards and "Aarogya Setu" contact tracing app. [64] This pandemic gave a thrust to adopt the telemedicine concept, which emerged as a feasible option when the healthcare system was strained in the prevention and management of COVID-19. MoHFW in collaboration with NITI Aayog and Medical Council of India (MCI) issued telemedicine guidelines which were pending since a long time.[65] in the initial phase, both doctors and patients were not in much favor to escalate this concept. But, with time people are becoming used to these teleconsultations. This pandemic forced the entire education system to go online. This ad-hoc change was not felt conducive for teaching and learning purposes. Gradually teachers and students became adapted to the system and quality started matching with classroom teaching. This experimentation opened up many ideas for future progressions and innovations.

Learn to appreciate nature

The environment has been too contaminated by humans to teach them anything important about nature and biodiversity. During the Janata Curfew, people amused the voice of birds instead of human-generated noise. Late on, significant changes in air and water quality were observed during the lockdowns. These unbelievable rejuvenating environmental changes were experienced first time in the living history and made people understand that mother earth can bounce back to life if humans allow for it.

CONCLUSION (Positive impact and Response from community)

The Government of India and the health care providers have been relentless in their efforts. The citizens must also help support the fight against the pandemic by adhering to government advisories of containment and social distancing.

a smart phone application has been launched by Ministry of Health, India named as "Aarogya Setu" to help citizens understand the health hazards, symptoms, best practices and relevant recommendations.

Hand hygiene, physical distancing, use of face mask, cough etiquettes, and avoid greetings through physical contacts are the major COVID-19 appropriate behaviors adopted during this pandemic. The major gears of those behavior changes were the enforcement by the government, fear, motivation (self and induced), and self-experiences or realizations with time. According to the "Trans-Theoretical Model," these behaviors have progressed from the "pre-contemplation" to "action" stage. Though the current focus is on responding to the pandemic and on coping with its immediate effects, yet focusing on the lessons learnt and sustaining these appropriate changes in behavior are equally important. Because these positive change in behavior are dwindling over time because of prioritizing the restoration of societal functions rather than pro-environmental actions. Sustaining these appropriate behaviors is important considering the bimodal distribution of the COVID-19 and possibility of advent of the second wave of COVID-19 in near future. Besides general public, the role of government and policymakers is also of paramount importance to support and sustain these appropriate behaviour changes (maintenance stage) by creating an enabling environment.

Enhancing preparedness and response

The national government must continue to take the leadership role and providing the policy direction to the control efforts. It should issue regular updated guidance on implementation and action to be undertaken at the various levels of the health system.

2. The state governments must align with the overall country efforts and ensure adherence to the guidelines and augment containment efforts. State should assume the lead in ensuring continuity of clinical and testing supplies as well as PPEs at the facility level within the state.

3. The national government must design an intensive strategy for "hot" districts with active disease clusters/those which reported several cases. Review the situation district-wise to limit geographic spread.

4. A "war-room" must be set up within all the districts at the collectorate and it should be adequately staffed 24 × 7. The district administration across the country will have to lead the disease control efforts within respective districts and prepare a district plan for handling the situation within the district. The capacity to make and implement decisions at the collectorate will need priority attention. Proactive and strategic approach at the district level leadership will be the key to halting the spread of the disease

and reversing the trend in cases.

5. District administration must expand efforts for tracing all the contacts/suspects and testing for the disease wherever indicated by current testing protocols. At the district level, the health department along with the civic bodies such as the municipal corporations should actively and promptly undertake contact tracing. An early telephonic call should emphasize on immediate home precautions and should be followed by a home visit to emphasize important issues and mitigate anxiety.

6. Maintain strict surveillance of suspect cases and contacts of confirmed cases. Surveillance will have to be supported by local residents and the community. In urban areas, residents welfare associations/housing societies will have to assume greater responsibility

7. Research in the epidemiology, clinical management of cases, and control measures must be promptly designed, implemented, and published. We need a detailed assessment of the natural history of the disease in the Indian population and the seroprevalence of COVID-19 within the population. Research to document the efficacy of treatment modalities and various drugs must be prioritized. These research efforts should be coordinated by the Indian Council of Medical Research at the national level. This research can guide interventions and responses in the future weeks.

Enabling care for patients

8. Identify dedicated facilities for treatment of COVID-19 positive cases. Ensure adequate number of beds and ventilators for serious patients needing ventilator support

9. Procure PPE and N95 masks in adequate numbers. Maintain a buffer stock for at least 2 weeks at the district level for all facilities handling COVID-19 suspect or confirmed cases.

10. We must strengthen sample collection within the districts with clear linkages to testing centers within the district or to the nearest testing centers. This will shorten the time for obtaining test results.

11. Identify and depute dedicated, adequate, and competent specialists and other health staff to manage clinical cases.

12. Expedite trainings in case management as per the latest ministry guidelines.

Broadening community and stakeholder engagement

13. Maintain emphasis on supporting government efforts through a broad-based partnership with voluntary organizations, civil society, and nongovernmental organizations. Engage private sector hospitals and medical/ nursing colleges with defined roles and responsibilities. Assign greater responsibility to medical/nursing colleges, both public and private, with accountability mechanisms.

14. Engage the industry and private sector to scale up production of health commodities which will be useful in combating the spread of the disease. Leverage private sector to help set up and manage call centers to help with contact tracing and other disease control activities.

15. While specific protection (vaccine) is currently unavailable, health promotion will have to continue to be the mainstay of primary prevention. Maintain emphasis on IEC activities during all phases of the pandemic.

The recent initiatives taken to tackle COVID-19 in India is exemplary, however strengthening of the existing medical and public health infrastructure at all levels of healthcare delivery is the need of hour. India has opportunity and is capable of creating history to keep the impact of present pandemic at the low level of adversity. And also india provides covid-19 vaccines to many countries like Bangladesh, Africa and many more….which remarks the global impact and india became the global pharmacy to the world.

REFERENCES

1. Zhou, P., Yang, X. L., Wang, X. G., Hu, B., Zhang, L., Zhang, W., et al. (2020). A pneumonia outbreak associated with a new coronavirus of probable bat origin. Nature, 579, 270–273. https ://doi.org/10.1038/ s4158 6-020-2012-7.

2. Wu, F., Zhao, S., Yu, B., Chen, Y. M., Wang, W., Song, Z. G., et al. (2020). A new coronavirus associated with human respiratory disease in China. Nature, 579, 265 269. https ://doi.org/10.1038/s41586-020-2008-3.

3. Richman, D. D., Whitley, R. J., & Hayden, F. G. (2016). Clinical virology (4th ed.). Washington: ASM Press.

4. Li, Q., Guan, X., Wu, P., Wang, X., Zhou, L., Tong, Y., et al. (2020). Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. New England Journal of Medicine, 382, 1199–1207. https ://doi.org/10.1056/NEJMo a2001 316.

5. Wathore, R., Gupta, A., Bherwani, H., & Labhasetwar, N. (2020). Understanding air and water borne transmission and survival of coronavirus: Insights and way forward for SARS-CoV-2. Science of the total environment, 141486. https ://www.sc ien cedir ect.com/scien ce/artic le/pii/S0048 96972 03501 54.

6. Bherwani, H., Nair, M., Musugu, K., Gautam, S., Gupta, A., Kapley, A., et al. (2020). Valuation of air pollution externalities: Comparative assessment of economic damage and emission reduction under COVID-19 lockdown. Air Quality, Atmosphere and Health. https ://doi.org/10.1007/s1186 9-020-00845-3.

7. Chan, J. F. W., Yuan, S., Kok, K. H., To, K. K. W., Chu, H., Yang, J., et al. (2020). A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: A study of a family cluster. The Lancet, 395, 514–523. https ://doi.org/10.1016/S0140 -6736(20)30154-9.

8. Sun, N., Shi, S., Jiao, D., Song, R., Ma, L., Wang, H., et al. (2020). A qualitative study on the psychological experience of caregivers of COVID-19 patients. American Journal of Infection Control, 48, 592–298. https ://doi.org/10.1016/j.ajic.2020.03.018.

9. Hellewell, J., Abbott, S., Gimma, A., Bosse, N. I., Jarvis, C. I., Russell, T. W., et al. (2020). Feasibility of controlling COVID-19 outbreaks by isolation of cases and contacts. The Lancet Global Health, 8, e488–e496. https ://doi.org/10.1016/S2214 -109X(20)30074 -7.

10. Kundnani H., 2020. Coronavirus and the future of democracy in Europe, Chatnam House. March 31, Retrieved from https :// www.chathamh ouse. org/ expert/ comment/coronavirus-and-future-democracy-europe.

11. Hanel L., 2020. Coronavirus: A stress test for democracy. Deutsche Welle, April 8. Retrieved from https://www.dw.com/en/coronavirus-a-stress-test-for-democracy/a-53064455.

12. Tsebelis, G. (2002). Veto Players: How Political Institutions Work. Princeton: Princeton University Press.

13. Van Overbeke, T. S., Diederik. (2020). High Politics in the Low Countries: COVID-19 and the Political Consequences of Indequate Policy Coordination in Belgium and the Netherlands. European Policy Analysis, 6(2), 305-317. https://doi.org/10.1002/epa2.1101

14. Vanhems, P. S.-E., Mitra; Chuzeville, Michel; Marion, Elodie. (2020). Rapid nosocomial spread of SARS-CoV-2 in a French geriatric unit. Infection Control & Hospital Epidemiology, 41(7), 866-867. https://doi.org/10.1017/ice.2020.99

15. Versluis, E., Asselt, M., & Kim, J. (2019). The Multilevel Regulation of Complex Policy Problems: Uncertainty and the Swine Flu Pandemic. European Policy Analysis, 5(1), 80-98. https://doi.org/10.1002/epa2.1064

16. Weaver, R. K. (1986). The Politics of Blame Avoidance. Journal of Public Policy, 6(4), 371-398. Retrieved from: http://www.jstor.org/stable/4007281

17. Weible, C. M., Nohrstedt, D., Cairney, P., Carter, D. P., Crow, D. A., Durnová, A. P., Haikkila, T., Ingold, K., Mc>Connell, A. & Stone, D. (2020). COVID-19 and the Policy Sciences: Initial Reactions and Perspectives. Policy Sciences 53(2), 225-241. https://doi.org/10.1007/s11077-020-09381-4

18. Zohlnhöfer, R. (2007). The Politics of Budget Consolidation in Britain and Germany: The Impact of Blame Avoidance Opportunities. West European Politics, 30(5), 1120–1138. https://doi.org/10.1080/01402380701617498.

19. CREA, Air quality improvements due to COVID 19 lock-down in India. https://energyandcleanair.org/air-quality-improvements-due-to-covid-19-lock-down-in-india/, 2020.

20. S. Gautam, The influence of COVID-19 on air quality in India: a boon or inutile, Bull. Environ.

Contam. Toxicol. 104 (2020) 724–726, https://doi.org/10.1007/ s00128-020-02877y.

21. S. Gautam, COVID-19: air pollution remains low as people stay at home, Air Qual. Atmos. Health (2020) 853–857, https://doi.org/10.1007/s11869-020-00842-6.

22. P. Sharma, M. Kaur, G. Narwal, Other side of the COVID-19 Pandemic : a review, Pharma Innov. 9 (2020) 366–369.

23. M. Sarfraz, K. Shehzad, S. Ghulam, M. Shah, The impact of COVID-19 as a necessary evil on air pollution in India, Environ. Pollut. 266 (2020) 115080, https://doi.org/10.1016/j.envpol.2020.115080.

24. S. Mahato, S. Pal, K.G. Ghosh, Effect of lockdown amid COVID-19 pandemic on air quality of the megacity Delhi, India, Sci. Total Environ. 730 (2020) 139086, https://doi.org/10.1016/j.scitotenv.2020.139086.

25. S. Sharma, M. Zhang, Anshika, J. Gao, H. Zhang, S.H. Kota, Effect of restricted emissions during COVID-19 on air quality in India, Sci. Total Environ. 728 (2020) 138878, https://doi.org/10.1016/j.scitotenv.2020.138878.

26. M. Arif, R. Kumar, S. Parveen, Reduction in water pollution in Yamuna river due to lockdown under COVID-19 pandemic, ChemRxiv (2020), https://doi.org/ 10.26434/CHEMRXIV.12440525.V1.

27. I. Mandal, S. Pal, COVID-19 pandemic persuaded lockdown effects on environment over stone quarrying and crushing areas, Sci. Total Environ. 732 (2020) 139281, https://doi.org/10.1016/j.scitotenv.2020.139281.

28. K. Goswami, Covid-19: 4 Unbelievable Environmental Changes Seen in India since Lockdown, 2020. https://www.msn.com/en-in/entertainment/hollywood/covid-19-4-vital-environmental-changes-evidenced-in-india-since-lockdown/ar-BB13vCko.

29. Alon,T. etal. (2020), The Impact of COVID-19 on Gender Equality, Northwestern University, http://faculty.wcas.northwestern.edu/~mdo738/research/COVID19_Gender_March_2020.pdf(accessed on 27March2020).

30. Bandiera,O. etal. (2019), "The Economic Lives of Young Women in the Time of Ebola: Lessons from an Empowerment Program", Impact Evaluation series, No.WPS 8760, World Bank Group, Washington D.C., http://documents.worldbank.org/curated/en/452451551361923106/The-Economic-Lives-of-Young-Women-in-the-Time-of-Ebola-Lessons-from-an-Empowerment-Program (accessed on 24March2020).

31. Brolin-Ribacke, K. et al. (2016), "Effects of the West Africa Ebola virus disease on health-care utilization: A systematic review", Frontiers in Public Health, Vol. 4/OCT, p. 222, http://dx.doi.org/10.3389/FPUBH.2016.00222.

32. FWF (2020), Covid-19 impact and responses: Bangladesh, https://www.fairwear.org/covid-19-dossier/covid-19-guidance-for-production-countries/covid-19-impact-and-responses-bangladesh/ (accessed on 1 April 2020).

33. Guan, W. et al. (2020), "Clinical Characteristics of Coronavirus Disease 2019 in China", New England Journal of Medicine, p. NEJMoa2002032, http://dx.doi.org/10.1056/NEJMoa2002032

34. ISSP (2018), International Social Survey Programme: Work Orientation IV - ISSP 2015, http://w.issp.org/menu-top/home/ (accessed on 25 March 2020).

35. Mishra AK, Sahu KK, Lal A, Sargent J. Patterns of heart Injury in COVID

36. Sahu KK, Mishra AK, Lal A. A twin challenge to handle: COVID-19 with pregnancy. J Med Virol. 2020 Apr 5.

37. Sahu KK, Lal A, Mishra AK. COVID-2019 and pregnancy: A plea for transparent reporting of all cases. Acta Obstet Gynecol Scand. 2020 Mar 19.

38. Prochaska JO, Velicer WF. The transtheoretical model of health behavior change. Am J Health Promot 1997;12:38-48.

39. 65% Indians Think Covid-19 Won't Affect India as it's a Warm Country, Survey Reveals [Internet]. News182020 [cited 2020 May 20];Available from: https://www.news18.com/news/ buzz/65-indians-think-covid-19-wont-affect-india-as-itsa-warm-country-survey-reveals-2544649.html.

40. Janta Curfew Pledge [Internet]. [cited 2020 May 21]; Available from: https://pledge.mygov.in/janata curfew/.

41. Shorter E. Ignaz semmelweis: The etiology, concept, and prophylaxis of childbed fever. Med Hist 1984;28:334.

42. Aiello AE, Coulborn RM, Perez V, Larson EL. Effect of hand hygiene on infectious disease risk in the community setting: A meta-analysis. Am J Public Health 2008;98:1372-81.

43. Wilder-Smith A, Freedman DO. Isolation, quarantine, social distancing and community containment: Pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. J Travel Med 2020;27:taaa020.

44. Lee K, Shukla V, Clark M, Mierzwinski-Urban M, Pessoa-Silva C, Conly J. Physical interventions to interrupt or reduce the spread of respiratory viruses — Resource use implications: A systematic review. CADTH Technol Overv 2012;2:e2302.

45. Radonovich LJ, Simberkoff MS, Bessesen MT, Brown AC, Cummings DA, Gaydos CA, et al. N95 respirators vs medical masks for preventing influenza among health care personnel: A randomized clinical trial. JAMA 2019;322:824-33.

46. Lo JY, Tsang TH, Leung Y-H, Yeung EY, Wu T, Lim WW. Respiratory infections during SARS outbreak, Hong Kong, 2003. Emerg Infect Dis 2005;11:1738-41.

47. Chavis S, Ganesh N. Respiratory Hygiene and Cough Etiquette. Infection Control in the Dental Office 2019;91- 103.

48. Choi JS, Kim KM. Predictors of respiratory hygiene/cough etiquette in a large community in Korea: A descriptive study. Am J Infect Control 2016;44:e271-3.

49. Bhattacharya S, Singh A. Namastey!! Greet the Indian way: Reduce the chance of infections in the hospitals and community. CHRISMED J Health Res 2019;6:77-8.

50. Spitting in public now an offence under Disaster Management Act: MHA-The Economic Times [Internet]. [cited 2020 May 18]; Available from: https://economictimes.indiatimes.com/news/politics- and- nation/spitting- in- public-now-an-offence-under-disaster-management-act-mha/ articleshow/75161291.cms.

51. COVID-19: Prohibit use, spitting of smokeless tobacco in public places, health ministry tells states-The Economic Times [Internet]. [cited 2020 May 18];Available from: https://economictimes.indiatimes.com/industry/cons-products/tobacco/covid-19-prohibit-use-spitting-of- smokeless-tobacco-in-public-places-health-ministry-tells- states/articleshow/75091929.cms?from=mdr.

52. Rs 1k fine for spitting at public places in Delhi | Delhi News-Times of India [Internet]. Times India [cited 2020 May 18]; Available from: https://timesofindia.indiatimes. com/city/delhi/rs-1k-fine-for-spitting-in-public-areas/ articleshow/75227539.cms.

53. Covid-19: Odisha district imposes Rs 500 fine for spitting in public places [Internet]. Hindustan Times 2020 [cited 2020 May 18]; Available from: https://www. hindustantimes.com/india-news/covid-19-odisha-district- imposes-rs-500-fine-for-spitting-in-public-places/story- DQQOTZqP3sd0hCKHDiHvhO.html.

54. Covid-19: States asked not to allow religious gatherings during lockdown [Internet]. Hindustan Times 2020 [cited 2020 May 18]; Available from: https://www. hindustantimes.com/india-news/covid-19-states-asked- not-to-allow-religious-gatherings-during-lockdown/story- iUNir6cvZ2TXwgHSj1gM4K.html

55. Karami M, Doosti-Irani A, Ardalan A, Gohari-Ensaf F, Berangi Z, Massad E, et al. Public health threats in mass gatherings: A systematic review. Disaster Med Public Health Prep 2019;13:1035-46.

56. Kashyaap S. [Product Roadmap] How B2B marketplace Jumbotail has maintained scale amid coronavirus crisis [Internet]. YourStory.com2020 [cited 2020 May 14]; Available from: https://yourstory.com/2020/05/product-roadmap-b2b-marketplace-jumbotail-scale-coronavirus.

57. Mills S, Brown H, Wrieden W, White M, Adams J. Frequency of eating home cooked meals and potential benefits for diet and health: cross-sectional analysis of a population-based cohort study. Int J Behav Nutr Phys Act 2017;14:109.

58. Pant H - M. What Are The Benefit s Of Lo cal Production? [Internet]. Ethical Mag. Fair Eco Sustain. Fash. Conscious Living 2018 [cited 2020 May 18]; Available from: https://www.mochni.com/what-are-the-benefits-of-local- production/.

59. Shepherd-Banigan M, Bell JF, Basu A, Booth-LaForce C, Harris JR. Workplace stress and working from home influence depressive symptoms among employed women with young children. Int J Behav Med 2016;23:102-11.

60. Remote Workers Are More Productive [Internet]. [cited 2020 May 21]; Available from: https://www.businessnewsdaily. com/15259-working-from-home-more-productive.html.

61. What is the Role of Social Media during the COVID-19 Crisis? [Internet]. HEC Paris [cited 2020 May 21]; Available from: https://www.hec.edu/en/knowledge/instants/what-role-social-media-during-covid-19-crisis-0.

62. Coronavirus Fake News: Indian government asks social media firms to control Coronavirus fake news-The Economic Times [Internet]. [cited 2020 May 21]; Available from: https://economictimes.indiatimes.com/tech/internet/indian-government-asks-social-media-firms-to- control-coronavirus-fake-news/articleshow/74734697.cms.

63. Coronavirus (Covid-19) updates worldwide and India with state wise status [Internet]. COVIDIndia.org [cited 2020 May 21]; Available from: https ://covidindia.org/.

64. www.ETHealthworld.com. Covid-19 lockdown 2.0: Telemedicine in India to see continued growth-ET HealthWorld [Internet]. ETHealthworld.com [cited 2020 May 21]; Available from: https://health.economictimes. indiatimes.com/news/health-it/covid-19-lockdown-2-0- telemedicine-in-india-to-see-continued-growth/75172147.

How to cite this article: Upadhyay D.J., Arya D.S. Progressive Response of India against the Global Pandemic (COVID-19) Positive Impact and Challenging Responses: A Systematic Review. Journal of Medical Care Research and Review. 2022;1167−1179. https://doi.org/10.52845/MCRR/2021-5-1-1