Challenges and Strategies during Pandemic: An Indian Perspective

Usha Rana,

Assistant Professor, Department of Sociology and Social Work,
Dr. Harisingh Gour Vishwavidyalaya (A Central University), Sagar,
Madhya Pradesh

Email: usharana21@gmail.com

Abstract

The world history has been witnessed of number of pandemics including Russian flu in 1889, Spanish flu in 1918, Asian flu in 1957, HIV/AIDS (human immunodeficiency virus, acquired immunodeficiency syndrome) in 1981, and SARS (severe acute respiratory syndrome) in 2003. Now, the human community is struggling against transmitting disease called COVID-19 (coronavirus disease). Many countries, including China, Italy, the United States of America, Spain, France and Iran, etc. experienced catastrophic COVID-19 attack and lost the lives of their many citizens. India, the world's second-largest population, has not yet experienced the outbreak of corona disease on a community level, but India is most likely to be affected. This paper presents a countryside discussion on the process and importance of a quick response of India as a remedy against COVID-19. This paper is based on secondary data from various resources of world health organization (WHO), the Ministry of Health and Family Welfare, Government of India and other research documents. The analysis demonstrates the decline in the percent of COVID-19 infected people after proper social distancing implementation among the human community.

Keywords: Coronavirus, COVID-19, epidemic, hydroxychloroquine, lockdown, pandemic, social distancing.

Introduction

Almost every year, the world suffers from an influenza outbreak in several forms, although its severity varies widely with the circumstances. In the last 120 years, the world underwent many pandemics- the 1889 Russian flu, the 1918 Spanish flu, the 1957 Asian flu, the 1981 HIV/AIDS (human immunodeficiency virus, acquired immunodeficiency syndrome), and the

2003 SARS (severe acute respiratory syndrome). Each of the outbreaks has different ramifications in terms of the severity and spread of the disease as well as responsible pathogens among the community (Kilbourne, 2006). Among all, the 1918 Spanish flu has been the most pervasive and acute, which was caused by the H1N1 virus. The outbreak accounted for approximately 40 million deaths and affected one-third of the world's total population.

The SARS coronavirus 2 (SARS-CoV-2), which is responsible for the current outbreak coronavirus disease (COVID-19), was first reported in November 2019 in Wuhan, China (Lai et al., 2020; Wang et al., 2020) and rapidly outspread in different parts of the world within a short span. The world health organization (WHO) declared the outbreak of COVID-19 as a pandemic on 12th March 2020 (World Health Organization, 2020_a). The WHO has delineated the symptoms of COVID-19 as fever, dry cough, tiredness, nasal congestion, pneumonia, and sore throat (Chen et al., 2020; Wang et al., 2020; Yang et al. 2020). As of June 30, 2020, there have been 10,185,374 confirmed cases including 503,862 number of deaths (World Health Organization, 2020_b). The United States of America (USA) is the most affected country in the world, with 2,537,636 number of total reported cases, including 126,203 deaths. The conditions are getting worse day by day as a 4% to 5% increment can be recorded in daily new cases since March 16, 2020 (Government of New York City, 2020).

The country, like China, with 1.3927 billion of the population, has fought actively against COVID-19 and succeeded in the containment of the disease within geographically defined locales. Earlier, a few studies have predicted that 40% of China's population (500 million people) would be infected if no containment efforts will be taken. However, the combined measures of early detection, isolation, and intercity travel bans helped to a drop in people to people contact and resulted in a reduction in transmission of disease. Together, these efforts succeeded in preventing the increment of cases by 67 fold (Lai et al., 2020). The other countries took a lesson from China and ordered a nationwide lockdown to encourage social distancing between people. The most prominent example is India, with 1.3526 billion population announced the 21 days nationwide lockdown on March 25, 2020, and extended further till May 3, 2020. The WHO has already mentioned their concerns regarding the spread of COVID-19 in highly dense populated India (450 people per km²). On the contrary, India's early call for nationwide lockdown kept away from stare of the peak cases. A study by the Indian Council of Medical Research (ICMR) showed that if India had not

implemented the lockdown on time, by April 15, 2020, there would have been 820,000 cases in India (Koshy, 2020). This study focuses on the relevance of initiatives taken by the Government of India against COVID-19. Moreover, it aims to explore and to understand the relevance of social distancing as a remedy to prevent the spread of COVID-19. In particular, this study conducts the analysis of the consequences generated by the pandemic in India.

Research Methodology

The methodology used in this study is the content analysis, which equipped the researcher to offer scientific evidence currently. The investigation is presented by utilizing the secondary data retrieved from various reports published by WHO, the Ministry of Health and Family Welfare, and the Government of India. The study was conducted between March 03, 2020, and June 30, 2020. In this vein, the study examines India's challenges and responses during a pandemic by exploiting the secondary data. Furthermore, the study has used Google Trends to assess the disease's influence on society. Google Trends can be used as an efficient tool for documentation and scientific review. In the current situation, the whole world is engaged in a single direction to research, management treatment to control pandemic COVID-19, and vast amounts of data being collected and archived by international, national, and regional bodies available in the public domain. Therefore, the practicality of utilizing existing data for research is becoming more prevalent (Andrews et al., 2012). Hence, the reports from leading organizations during a pandemic and other related documents have incorporated in this study. The data analysis enables the researcher to argue on certain aspects of India's measures during the pandemic of COVID-19.

Mitigation Strategies

In India, a female student at Wuhan University, China, was confirmed as the first case of COVID-19 on January 30, 2020 in the southern state of Kerala after returning to India. As of June 30 2020, a total of 566,840 cases have been confirmed with 16,893 deaths (Government of India. Ministry of Health and Family Welfare, 2020). India tested approximately 10,473,771 samples, which is lowest in the world for a highly populous nation, and epidemiologists suggest increasing the testing as the number of infected cases could be higher ("Coronavirus: India defiant," 2020). However, India manages to keep the average positivity rate at 8.29, which is significantly lower than other severely infected countries (Sinha, 2020). The Government of India requested a 14-hour voluntary public curfew on March 22, 2020, which was followed by

lockdowns in 75 districts, including major cities where infections were reported. Furthermore, the Government of India announced a 21 days complete nationwide lockdown on March 24, 2020, affecting the 1.3526 billion population and extended the complete lockdown further till May 3, 2020. The WHO praised the efforts taken by India and said that with this “tremendous capacity”, India can fight actively against this pandemic (“India has tremendous,” 2020). India has scored with a “100” for its stringent action against COVID-19 by the Oxford COVID-19 Government Response Tracker (OxCGRT) report, which was prepared based on the data collected from 73 nations (“India beats other,” 2020; “India scores high,” 2020). This report appreciated the quick response of the government taken in the fields of emergency policy making and emergency investment in healthcare. On the contrary, some economists expressed their concerns about the economic catastrophe caused by the lockdown, which has impacted a large number of people involved in micro and small enterprises as informal workers as well as farmers due to unavailability of transportation and no access to markets (Kishore, 2020; Ray, 2020). The situation in India is different from other countries. 27.3% of the Indian population is lying below the poverty line. The survival of 33% of the total population depends on daily wages.

After 3 cases reported in February 2020, no significant rise in cases was observed in India till the end of February. On March 4, 2020, 22 new cases were reported, out of which 14 infected members were Italians. The rapid escalation in the cases was reported throughout the March. Most of the cases were people with a travel history to affected countries or people having contact with infected people. The Ministry of Health and Family Welfare analyzed the data of age-wise corona patients and showed that 42% of patients belong to the age group of 21-40 while the ages between 41 to 50 compromise with 33% of total infected cases. However, only 17% cases were reported from the age group (60+) at high risk, while the rest 9% cases have been found in the ages below 20 years. The graphical representation of age-wise distribution of cases is shown in Figure 1. It can be noted that 83% of total cases are under the age of 50 years. The reason for the high percentage under the age of 50 is that a high number of Indians from this age group are working or studying in the other parts of the world, including the USA, Italy, France, UK, and China, etc. They returned to India after an escalation of infection in those countries. The Government of India shared the data received from the Bureau Of Immigration and revealed that more than 1.5 million international

air travelers entered into India between January 18, 2020, to March 23, 2020 (“15 lakh air,” 2020).

India’s efforts to combat COVID-19 has many dimensions. However, the situation in India is different from other countries. 27.3% of the Indian population is lying below the poverty line. The survival of 33% of the total population depends on daily wages. Despite all these issues, India took many measures to contain the spread of COVID-19, which are discussed following.

Lockdown

On March 22, 2020 the Government of India requested all citizens to cooperate in volunteer “Janta curfew” and also decided to lockdown in 82 districts of 22 states and union territories where COVID-19 cases were confirmed. On March 24, 2020 the Government of India announced a complete nationwide lockdown, starting from midnight for 21 days (“Narendra Modi announces,” 2020). As a result, India had succeeded in slowing the growth rate of the pandemic of doubling the case in every 3 days to doubling the case in 6 days (Ramesh, 2020). On April 14, 2020 the Government of India reviewed the situation and decided to extend the nationwide lockdown till May 3, 2020, with conditional guidelines to relax the lockdown for the areas that would be able to contain the spread from April 20, 2020. The Government of India has directed its citizens not to leave the house without doing the necessary work, and if it is very necessary to get out, then make a distance of at least 1 meter from other persons. In addition, citizens should avoid public meetings where there is a high risk of the infection spreading. We should not personally meet our immediate relatives and take their skills through technology. Today, there are many technical mediums such as mobile, WhatsApp, and Facebook, through which we can connect with everyone even by staying in our homes.

Figure 1. % of cases in India on April 2, 2020. Source: Ministry of Health and Family Welfare (Government of India. Ministry of Health and Family Welfare, 2020).

Travel and entry restrictions

India has stopped issuing new visas from March 3. Also, the Government of India suspended previously issued visas to the nationals of Italy, Iran, South Korea, and Japan. All types of new visas were suspended from March 13, 2020 to stop the traffic from infected countries. On March 20, 2020 India banned international flights to curb the corona outbreaks. To prevent the intercity movement of people, the Government of India suspended the Indian railway's services and domestic flight services from March 24, 2020.

Aarogya Setu

India launched an android based mobile application called Aarogya Setu to help in "contact tracing and containing the spread" of COVID-19 pandemic in the nation, which was developed by the Ministry of Electronics and Information Technology. The World Bank already asked countries to deploy the technologies to combat the pandemic. Google and Apple companies announced on April 11, 2020 to develop similar software for mobile phones as the Aarogya Setu application, which would help in tracing people's contact with infected people.

Testing

Initially, India allowed testing of those people who visited 12 high-risk countries or those who have come into contact with infected people or those who have pneumonia symptoms as per government guidelines. After a sudden increase in cases on March 20, 2020, the government ordered the testing of all pneumonia cases regardless of their travel history or contact history with infected people. These tests are provided free of cost by the government to all corona patients. In March start, only 51 government laboratories were authorized for corona testing. The number of government laboratories was extended up to 121 government laboratories by March 27, 2020. Later on, 35 private laboratories have been approved by ICMR for conducting corona testing with a testing capacity of 12,000 tests per day. At present, about 1000

testing laboratories are functioning with a testing capacity of 250,000 tests per day. Moreover, the cost of sample testing by private labs was capped by the government at ₹4,500 (US\$ 58.78). Additionally, the Institute of Genomics and Integrative Biology, Delhi, had succeeded in developing a rapid paper-strip test kit in which each test would cost around ₹500 (US\$ 6.53). In spite of all, there are concerns that corona testing in India is being inadequately conducted and the need for ramping up the scale of testing is a necessity to understand the real scope of the number of people affected.

Treatment

Rajasthan state became first state in India to treat 3 corona patients with the combination of anti-malaria, anti-Swine flu and anti-HIV drugs. On March 23, the National Task Force for COVID-19 constituted by ICMR approved the use of hydroxychloroquine for treatment of high-risk corona patients. Furthermore, India banned the export of hydroxychloroquine on March 24 to keep the buffer in case of a rise in the number of corona patients. India is the largest producer of hydroxychloroquine and captures 70% of the world's supply chain, according to the Indian Pharmaceutical Alliance. Many countries like the USA, Spain, Germany, Bahrain, and Brazil, etc. requested India to release the hydroxychloroquine tablets in this pandemic situation. On April 11, India lifted the partial ban from the export of hydroxychloroquine and approved to supply the hydroxychloroquine to 13 countries. Besides, the Ministry of Health and Family Welfare informed the nation that India had sufficient stock of 32.8 million hydroxychloroquine tablets, while India will require only 10 million hydroxychloroquine tablets in the coming weeks (Saha, 2020).

Ration

In India, approximately 139 million migrant workers work away from their home town in other parts of the country. Corona pandemic left tens of millions of migrant workers unemployed. On March 25, 2020, the Government of India had announced that the government would provide wheat at the rate of ₹2 (US\$ 0.026) per kg and rice at ₹3 (US\$ 0.039) per kg to 800 million people. Besides, three months ration would be given to all in advance. Furthermore, the government credited ₹500 (US\$ 6.53) each to over 40.7 million “Jan Dhan” accounts of women as relief package during corona outbreaks by April 2, 2020. The Rural Development Ministry said that by the end of April, the ministry would credit more than 203.9 million women accounts.

Hospitals and Isolation Beds

India has not experienced corona pandemic related shortages of equipment or hospitals so far. As per the National Health Profile-2019, India has 713,986 total government hospital beds with 40,000 ventilators (Ministry of Health and Family Welfare, 2019). This availability of beds per 1000 population is 0.55 beds. The fragile healthcare infrastructure of the country will be inadequate to cope with such an outbreak. So, the Ministry of Health and Family Welfare decided on a pronged strategy to build new hospitals and isolation beds in a short span. According to the Ministry of Health and Family Welfare, a total of 586 hospitals are recognized as COVID-19 devoted hospitals with a capacity of over 100,000 isolation beds and 11,500 ICU beds reserved for coronavirus patients (“586 COVID-19 hospitals,” 2020). The government will import 10,000 ventilators from China-based manufacture and has placed orders of 40,000 ventilators to Indian manufactures. Furthermore, the Indian Railways converted 20,000 coaches into isolation beds, which can accommodate 320,000 corona patients. Additionally, Indian Railways had produced a total of 200,000 masks and 25,000 sanitizers.

Countryside’s situation and Discussion

A total of 566,840 confirmed cases with 16,893 deaths were considered for this study. The mortality rate due to COVID-19 is 3.3%. The Maharashtra state is highly impacted due to the corona outbreak with 174,761 number of reported cases, while Delhi state is the third highly influenced state of India with 87,307 cases. Significantly more cases have been seen in these states because Maharashtra state is an economic hub of India, while Delhi is the political hub of India, and both the locations have maximum movement of aircraft to other countries. According to the Ministry of Civil Aviation, 460,429 number of aircraft movements have been recorded from Indira Gandhi International Airport, Delhi, during the fiscal year 2018-19. As a protective measure, India started the thermal screening of foreign travellers since January 2020 at different airports throughout the country. Till March 4, 2020, 589,000 people were screened at airports. The Government of India instructed them to quarantine themselves for at least 14 days at their homes. On the contrary, a few of them violated self-isolation and became the carrier of the coronavirus. This situation forced the government to call nationwide lockdown on March 24, 2020. The nationwide lockdown helped India to slow the stare of corona spread at 8% to 10% increment in daily cases, which was in between 20% to 30% before complete lockdown. The cumulative new cases

reported daily now stood at 1684, and it has been projected that if a similar trend continues, then the country will have zero cases by May 16, 2020 (Sharma, 2020).

A study by the ICMR explored the significance of complete lockdown in the corona epidemic and showed that by April 15, 2020, India would have seen a peak of 820,000 corona cases without a lockdown. Contrariwise, migrant workers in large numbers thronged to Delhi interstate bus terminal to reach their home town during the amid of lockdown on March 28, 2020, notwithstanding the threat of the spread of the coronavirus disease ("India lockdown: Migrant," 2020). Most of them were from Uttar Pradesh state. The Government of Uttar Pradesh arranged 1000 buses to ferry them to their home towns. To prevent repetition of such incidents, the Government of India ordered the state governments to set up immediate relief camps for the migrant workers returning to their native states. On March 29, 2020, the Government of India issued sweeping orders directing that the landlords should not demand rent during the period of the lockdown and that employers should pay wages without deduction. The people that violated the lockdown were to be sent to government-run quarantine facilities for 14 days. A similar incident was repeated in Mumbai on April 14, 2020, where approximately 3000 migrant workers gathered outside the Bandra railway terminal get back their home. The police forces controlled the crowd after resorting to the lathi-charge (Mengle, 2020).

Developing countries like India have to fight on two fronts: first against corona disease and second against misinformation. During "Janta curfew", one misinformation went viral on all social media that the government is spraying "anti-corona" drug through helicopters in the country (Sengupta, 2020). Another viral message shared by many people, including few film actors that the vibration generated by clapping together during "Janata curfew" will kill the virus ("Mohanlal, many others," 2020). One fake news claims that staying home for 14 hours during "Janata curfew" break the chain of transmission as the lifetime of coronavirus is only 12 hours (Ratna, 2020). This message also claimed that "Janata curfew" will result in the reduction of coronavirus cases by 40%. Indian film actor Rajinikanth has been taken down by Twitter for violating the guidelines by sharing misinformation in which it was claimed that a 14-hour stay home could stop the coronavirus disease going from "stage 2" to "stage 3" ("Twitter takes down," 2020). Another fake news claims that doctors and health workers are the carriers of the corona infection, which results in attacks and discrimination with them. There have also been some incidents where health workers and police personnel were

abused. Those who are determined to be life-saving in the face of this pandemic should criticize this kind of abuse and should raise their voice against it on a personal level. The Government of India has embellished all such workers with the name of Corona warrior. The government evicted them from their homes over fears they may be carrying coronavirus. In cases reported across the country, healthcare professionals described the growing stigma they are facing from their neighbors and landlords, resulting in many being refused taxis, barricaded from their own homes, or made homeless (Datta, 2020; Sankar, 2020). The tourists from high-risk countries such as the USA, UK, and Israel were facing hostility, including evictions from rented homes due to misinformation (Purohit & Mukherjee, 2020).

A staggering case came into light on March 31, 2020, where after a 36-hour operation, the government rescued 2300 people from a building of an organization called *Tablighi Jamaat*. Out of them, 617 were having corona symptoms and hospitalized in different hospitals in Delhi. After investigations, the government revealed that this group organized a religious gathering on March 13-15, 2020, in which approximately 5000 participated, and many of them left for their home town before March 20, 2020, with corona infection. Nearly 40,000 people were traced and quarantined who were in contact with members of this group. In a shocking revelation, the Ministry of Health and Family Welfare explored that nearly 30% i.e., 4291 cases of the total coronavirus cases, were caused due to the gathering event in Delhi by *Tablighi Jamaat*. This organization has been seen as a hotspot of a spike in the corona cases in India with an increment rate of 20% in between April 1, 2020, to April 4, 2020. Despite the one or two incidents of nationwide lockdown violations, most Indians have followed this nationwide lockdown. As a result, India has succeeded to some extent in preventing the spread of this disease. Home delivery arrangements of essential goods were made by the government in big cities so that people came out of the houses in small numbers. Along with this, the government issued e-passes to the persons involved in essential services so that the essential services keep running smoothly. The government increased awareness against COVID-19 in public through various advertising mediums and also decided their participation in this fight. People were educated about social distancing by the government so that they do not come in contact with an infected person knowingly or inadvertently. Till now, there is no cure for this disease in the world, so for its prevention, keeping people away from each other is the only cure. If we do not follow this social distancing, then this disease will spread in India like

other countries, which will create a terrible situation. Because a single infected person can infect 2 to 3 people and those 2 to 3 people will further infect 4 to 6 people. This way, this sequence will go on, and it will become impossible for any government to stop it. Additionally, personal hygiene has also emerged as a major weapon in the fight against COVID-19. The WHO has issued a guideline that if we want to stop this epidemic from progressing, then we have to take special care of hygiene at the individual level. Every person should wash his hands for at least 20 seconds. If we go outside the house for any urgent work, then we should clean our hands with an alcohol-based sanitizer at the time of time. The use of masks should be mandatory for every person so that the disease does not spread from one person to another.

During this pandemic, surprisingly, a spike in cases of domestic violence has come into the light. A study revealed that in the first 11 days of the lockdown, 92,000 calls reporting domestic violence and abuse. The Ministry of Child and Women Development explained the reason as it could be because of the presence of abusers around the victim (Rukmini, 2020). As of June 30, 2020, the National Commission for Women informed that a 48% rise is recorded in the cases of domestic violence in between March 23, 2020, to June 30, 2020. The commission has been reported a total of 587 cases of domestic violence during the first phase of lockdown while they had received 396 complaints in the previous 25 days before lockdown (“Cases of domestic,” 2020). On April 20, 2020, the Delhi high court ordered the central government on hearing public interest litigation filed by non-government organizations that the government must take strict actions to curb the domestic violence in lockdown (“Implement steps to,” 2020). Accordingly, the government started a 24x7 helpline and constituted teams to rescue victims whenever a complaint is being received.

With the development of the COVID-19 outbreak, India has strategized at various levels to encounter it rapidly. Emerging state emergency situations stipulated the public role and state responsibility. The state's initial responses put the COVID-19 cases as low as 594 cases per million with such a large population. The consequences of a pandemic can be noted in community health, economy, and society. The increasing mortality or morbidity heightened mental stress levels, which led to depression, fear, anxiety, and emotional imbalance among the people and incited them to suicide. During the lockdown, more than 300 people were committed suicide due to mental torment in India. According to the data, out of these 300 “non-coronavirus deaths,” 80 people ended their lives due to the fear of being infected and loneliness. Furthermore, the wider consequences of a pandemic can be

observed in the social system, interpersonal relations, elderly issues, child abuse, and violence against women.

Conclusion

Preventive measures to shape the actions government take prior to and during an epidemic, we need to comprehend and captivate with the perspectives of those actions. Viewed from the outside, the approach of the government towards the pandemic can be presented as proactive. However, viewed from the perspective of ordinary people involved in anticipating and responding to infection, it is clear that the public has faced some problems with the complete lockdown. During the pandemic, there are many challenges on different fronts before the government, which the government can only face with the help of the public. Decisions taken by the Government of India at the right time prevented the spread of the disease to the third stage. The country, with a population of 1.3526 billion, has proved that they are ready to make every kind of sacrifice against this epidemic, whether it is at the economic level or social level. According to one study, at least 136 million Indians will be unemployed during the epidemic (Das, 2020). At such a time, every person should come forward according to his ability to help all those who have suffered the most outbreak of this epidemic. We can collectively deliver these people with food and the items of their needs. At this time, according to Mahatma Gandhi's principle of trusteeship, every competent person or group should be led to meet the needs of the needy, which will collectively help in defeating this epidemic. At the same time, the extent to which India has expanded its health services on a war footing in such a short time has aroused faith in the people.

References

- Andrews, L., Higgins, A., Andrews, M. W. & Lalor, J. G. (2012). Classic grounded theory to analyse secondary data: Reality and reflections. *The Grounded Theory Review*, 11(1), 12-26. Available from: <http://groundedtheoryreview.com/2012/06/01/classic-grounded-theory-to-analyse-secondary-data-reality-and-reflections/>.
- Cases of domestic violence rising, being reported from across India during lockdown: Population Foundation of India. (2020, April 24). *Express Healthcare*. Available from: <https://www.expresshealthcare.in/news/cases-of-domestic-violence-rising-being-reported-from-across-india-du>

ring-lockdown-population-foundation-of-india/419288/.

- Chen, N., Zhou, M., Dong, X., et al. (2020). Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *The Lancet*, 395(10223), 507-513. doi.org/10.1016/S0140-6736(20)30211-7.
- Coronavirus: India defiant as millions struggle under lockdown. (2020, March 28). *BBC*. Available from: <https://www.bbc.com/news/world-asia-india-52077395>.
- Das, G. (2020, March 31). 136 million jobs at risk in post-corona India. *Livemint*. Available from: <https://www.livemint.com/news/india/136-million-jobs-at-risk-in-post-corona-india-11585584169192.html>.
- Datta, R. (2020, March 25). Kolkata landlords evict medical professionals, Resident Doctor's Association steps in. *India Today*. Available from: <https://www.indiatoday.in/india/story/bengal-kolkata-landlords-evict-medical-professionals-coronavirus-1659333-2020-03-25>.
- 15 lakh air travellers entered India in 2 months: Cabinet Secretary. (2020, March 27). *The Economic Times*. Available from: <https://economictimes.indiatimes.com/news/politics-and-nation/15-lakh-air-travellers-entered-india-in-2-months-cabinetsecretary/articleshow/74849839.cms>.
- 586 COVID-19 hospitals with 1 lakh isolation beds, over 11K ICU beds across country: Health Ministry. (2020, April 11). *The Economics Times*. Available from: <https://economictimes.indiatimes.com/industry/healthcare/biotech/healthcare/586-covid19-hospitals-with-1-lakh-isolation-beds-over-11k-icu-beds-across-country-healthministry/articleshow/75097529.cms?from=mdr>.
- Government of India. Ministry of Health and Family Welfare. (2020). Available from: www.mohfw.gov.in.
- Government of New York City. (2020). *Coronavirus Disease 2019 (COVID-19) Daily Data Summary*. Available from: <https://www1.nyc.gov/assets/doh/downloads/pdf/imm/covid-19-daily-data-summary-deaths-04152020-1.pdf>.
- Implement steps to curb domestic violence during Covid-19 lockdown: High Court to Centre, Delhi govt. (2020, April 20). *The Economic Times*. Available from: <https://economictimes.indiatimes.com/news/politics-and-nation/implement-steps-to-curb-domestic-violence-during-covid-19-lockdown-high-court-to-centre-delhi-govt/articleshow/75249397.cms>.

- India beats other nations in Covid response: Study. (2020, April 11). *The Times of India*. Available from: <https://timesofindia.indiatimes.com/india/india-beats-other-nations-in-covid-response-study/articleshow/75089755.cms>.
- Indian Council of Medical Research. (2020). *SARS-CoV-2 (COVID-19) Testing: Status Update 18 April 2020 9:00 PM IST*. Available from: <https://www.icmr.nic.in/content/sars-cov-2-covid-19-testing-status-update-18-april-2020-900-pm-ist>.
- India has tremendous capacity in eradicating coronavirus pandemic. (2020, March 24). *The Economic Times*. Available from: <https://economictimes.indiatimes.com/news/politics-and-nation/india-has-tremendous-capacity-in-eradicating-coronavirus-pandemic/who/articleshow/74788341.cms?from=mdr>.
- India lockdown: Migrant workers in very large numbers at Delhi's Anand Vihar bus terminal. (2020, March 28). *The Economics Times*. Available from: <https://economictimes.indiatimes.com/news/politics-and-nation/india-lockdown-migrnt-workers-in-very-large-numbers-at-delhis-anand-vihar-bus-terminal/videoshow/74865929.cms?from=mdr>.
- India scores high on Covid-19 response tracker made by Oxford University. (2020, April 10). *India Today*. Available from: <https://www.indiatoday.in/india/story/india-scores-high-on-covid-19-response-tracker-made-by-oxford-university-1665573-2020-04-10>.
- Kilbourne, E. D. (2006). Influenza pandemics of the 20th century. *Emerging Infectious Diseases*, 12(1), 9-14. doi: 10.3201/eid1201.051254.
- Kishore, R. (2020, March 28). 'Unprecedented crisis; do whatever it takes': Jayati Ghosh on Covid-19. *Hindustan Times*. Available from: <https://www.hindustantimes.com/india-news/unprecedented-crisis-do-whatever-it-takes-jayati-ghosh-on-covid-19/storyi9tPVvFhAs1d1Ud6uEYN4L.html>.
- Koshy, J. (2020, April 11). Without lockdown, India would have seen over 8 lakh cases by April 15, says Health Ministry. *The Hindu*. Available from: <https://www.thehindu.com/news/national/coronavirus-without-lockdown-india-would-have-seen-over-8-lakh-cases-by-april-15-says-health-ministry/article31319364.ece>.
- Lai, C. C, Shih, T. P, Ko, W. C., Tang, H. J., & Hsueh, P. R. (2020). Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the

- challenges. *International Journal of Antimicrobial Agents*, 55(3), 105924. doi: 10.1016/j.ijantimicag.2020.
- Lai, S., Ruktanonchai, N. W., Zhou, L., et al. (2020). Effect of non-pharmaceutical interventions for containing the COVID-19 outbreak: an observational and modelling study. *Medrxiv*. doi: 10.1101/2020.03.03.20029843.
- Mengle, G.S. (2020, April 14). Migrant workers protest outside Bandra railway station. *The Hindu*. Available from: <https://www.thehindu.com/news/cities/mumbai/coronavirus-migrant-workers-protest-outside-bandra-railway-station-demand-help-to-return-home/article31341724.ece>.
- Ministry of Health and Family Welfare. (2019). *National Health Profile-2019*. Available from: <http://www.cbhidghs.nic.in/showfile.php?lid=1147>.
- Mohanlal, many others share fake info that ‘clapping may kill virus’, PIB debunks. (2020, March 22). *The News Minute*. Available from: <https://www.thenewsminute.com/article/mohanlal-many-others-share-fake-info-clapping-may-kill-virus-pib-debunks-120844>.
- Narendra Modi announces 21-day nationwide lockdown from midnight in bid to contain coronavirus. (2020, March 24). *Firstpost*. Available from: <https://www.firstpost.com/health/narendra-modi-announces-21-day-nationwide-lockdown-from-midnight-in-bid-to-contain-coronavirus-8185581.html>.
- Purohit, K. & Mukherjee, T. (2020, March 24). Foreign tourists face hostility in India amid coronavirus panic. *Aljazeera*. Available from: <https://www.aljazeera.com/news/2020/03/foreign-tourists-face-hostility-india-coronavirus-panic-200324083648362.html>.
- Ramesh, S., Basu, M. (2020, April 14). R0 data shows India’s coronavirus infection rate has slowed, gives lockdown a thumbs up. *The Print*. Available from: <https://theprint.in/science/r0-data-shows-indias-coronavirus-infection-rate-has-slowed-gives-lockdown-a-thumbs-up/399734/>.
- Ratna. (2020, March 21). Fact Check: Social media users give misleading twist to PM Modi's concept of 'Janta curfew'. *India Today*. Available from: <https://www.indiatoday.in/fact-check/story/social-media-users-give-misleading-twist-pm-modi-janta-curfew-1658195-2020-03-21>.
- Ray, D., Subramanian, S., & Vandewalle, L. (2020, April 11). India's Lockdown. *The India Forum*. Available from: <https://www.theindiaforum.in/article/indias-lockdown>.

- Rukmini, S. (2020, April 18). Locked down with abusers: India sees surge in domestic violence. *Aljazeera*. Available from: <https://www.aljazeera.com/news/2020/04/locked-abusers-india-domestic-violence-surge-200415092014621.html>.
- Saha, P. (2020, April 11). India to ship hydroxychloroquine tablets to 13 countries in first consignment. *India Today*. Available from: <https://www.indiatoday.in/india/story/india-ship-hydroxychloroquine-tablets-countries-first-consignment-1665759-2020-04-11>.
- Sankar, A. (2020, March 30). Indian doctors being evicted from homes over coronavirus fears. *The Guardian*. Available from: <https://www.theguardian.com/world/2020/mar/30/indian-doctors-being-evicted-from-homes-over-coronavirus-fears>.
- Sengupta, T. (2020, March 20). Is government spraying coronavirus vaccine using airplanes? No, it's fake news. *Hindustan Times*. Available from: [hindustantimes.com/it-s-viral/is-government-spraying-coronavirus-vaccine-using-airplanes-no-it-s-fake-news/story-QmSDrflW8SkSghT2TUf5cK.html](https://www.hindustantimes.com/it-s-viral/is-government-spraying-coronavirus-vaccine-using-airplanes-no-it-s-fake-news/story-QmSDrflW8SkSghT2TUf5cK.html).
- Sharma, M. (2020, April 25). Will India's coronavirus curve flatten by mid-May?. *India Today*. Available from: <https://www.indiatoday.in/india/story/will-india-s-coronavirus-curve-flatten-by-mid-may-1670851-2020-04-25>.
- Twitter takes down Rajinikanth's Janata Curfew video for spreading misinformation. (2020, March 21). *India Today*. Available from: <https://www.indiatoday.in/movies/regional-cinema/story/twitter-takes-down-rajinikanth-s-janata-curfew-video-for-spreading-misinformation-1658282-2020-03-21>.
- Sinha, A. (2020, March 19). One COVID-19 positive infects 1.7 in India, lower than in hot zones. *The Indian Express*. Available from: <https://indianexpress.com/article/coronavirus/coronavirus-india-infection-rate-china-6321154/>.
- Wang, D., Hu, B., Hu, C., et al. (2020). Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China. *JAMA*, 323(11), 1061-1069. doi:10.1001/jama.2020.1585.
- Wang, L. S., Wang, Y. R., Ye, D. W., & Liu, Q. Q. (2020). A review of the 2019 Novel Coronavirus (COVID-19) based on current evidence. *International Journal of Antimicrobial Agents*, 19, 105948. doi: 10.1016/j.ijantimicag.202.

- World Health Organization. (2020_a). *WHO Director-General's opening remarks at the media briefing on COVID-19*. Available from: <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-atthe-media-briefing-on-covid-19---11-march-2020>.
- World Health Organization. (2020_b). *Novel Coronavirus (2019-nCoV) situation reports*. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>.
- Yang, Y., Lu, Q., Liu, M., et al. (2020). Epidemiological and clinical features of the 2019 novel coronavirus outbreak in China. *Medrxiv*. doi:10.1101/2020.02.10.20021675.