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Pandemics after 1947 in India and Their Effect on Life

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ABSTRACT: Covid-19 brought ‘pandemics’ to the centre of the world’s attention in 2020. Pandemics have occurred in the past due to several diseases and cholera, plague and influenza, in particular, ravaged the Indian subcontinent in the 19th and early 20th century. This paper provides a factsheet of that era, highlighting the special nature of the period after 1947. Plague, Influenza, small pox, swine flu and Covid-19 were the basic epidemics which spread after the country’s independence. This paper enumerates the post independence (after 1947) pandemics occurred in India and their effects.

KEYWORDS: pandemic, plague, influenza, swine flu, small pox, Covid-19, India, independence, 1947

I. INTRODUCTION

Plague-death rates peaking barring the Surat plague scare of 1994, it stands as being virtually eradicated in India. The greater immunity of rodents to plague is seen as one of the reasons why this happened, along with better plague prevention measures. The development of antibiotics also made plague a curable disease. The 1994 plague in India was an outbreak of bubonic and pneumonic plague in south-central and western India from 26 August to 18 October 1994. 693 suspected cases and 56 deaths were reported from the five affected Indian states as well as the Union Territory of Delhi.



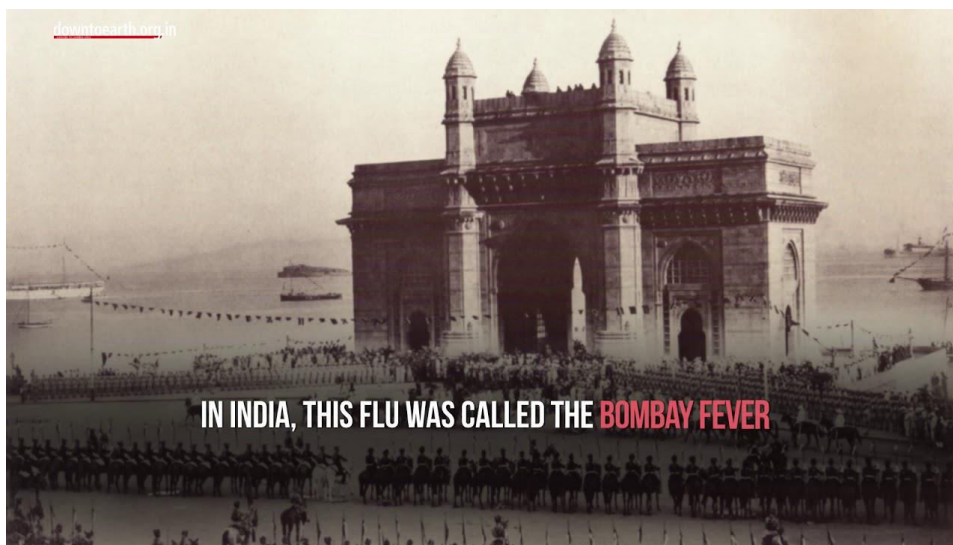
Plague prevention measures evolved over time and included measures such as the following: Disinfection, Evacuation, Inoculation, Medical Relief, Public Education, Rat Proofing, Rat Extermination and Improvements in sanitation. The regional impact of plague in India was highly uneven. The 1994 plague in India was an outbreak of bubonic and pneumonic plague in south-central and western India from 26 August to 18 October 1994. 693 suspected cases and 56 deaths were reported from the five affected Indian states as well as the Union Territory of Delhi. These cases were from Maharashtra (488 cases), Gujarat (77 cases), Karnataka (46 cases), Uttar Pradesh (10 cases), Madhya Pradesh (4 cases) and New Delhi (68 cases). There are no reports of cases being exported to other countries. Tourism was negatively affected, flights to India were cancelled, and some planes from India were fumigated at airports. Many flights from India to the nearby Gulf region were suspended. Some countries also put a hold on the imports from India. Paramilitary forces set up checkpoints to deal with people fleeing Surat. Panic buying and government-ordered closures spread to Mumbai and Delhi. Economic damage in Surat was estimated at ₹816 crore (₹8.160 billion). The city implemented massive infrastructure improvements, tearing down slums, covering sewers, constructing public pay toilets, and



implementing fines for littering. It also improved its plans for emergency travel advisories, and fired some corrupt officials and disciplined ineffective city workers, including street sweepers. By 1996, the city was judged the cleanest in India.[1,2]

II. DISCUSSION

Influenza mortality occurred in all the territory of post-1947 India, including Goa (earlier Portuguese ruled) and Pondicherry (earlier French ruled).



The 1974 **smallpox epidemic** of India was one of the worst smallpox epidemics of the 20th century and occurred three years before smallpox was eradicated. Over 15,000 people contracted and died from smallpox between January and May 1974. Most of the deaths occurred in the Indian states of Bihar, Orissa and West Bengal. There were thousands who survived but were disfigured or blinded. India reported 61,482 cases of smallpox to World Health Organization (WHO) in these five months. India had over 86% of the world's smallpox cases in 1974, primarily due to this epidemic.

By January 1975, an operation was started aimed at containing the last cases of smallpox, called "Target Zero", with the identification of the last smallpox patient in India occurring on May 24, 1975. By 1980, smallpox was certified as being eradicated from the world. Smallpox was eradicated due to the WHO's smallpox eradication program. This program was formally established in 1958, but because of logistics disagreements between the WHO and the Indian government, did not progress rapidly. Headway only began to take place in India after the reorganization of the WHO in the mid 1960s.



Donald Henderson, who was a U.S. Public Health Services Officer stationed in New Delhi, said that "If this interest and concern about ending smallpox can be maintained for the next few months, it's all over. We don't think we're overconfident, but everything looks good. By June of 1975, we hope we'll be finished with smallpox in Asia[3,4]

Implications

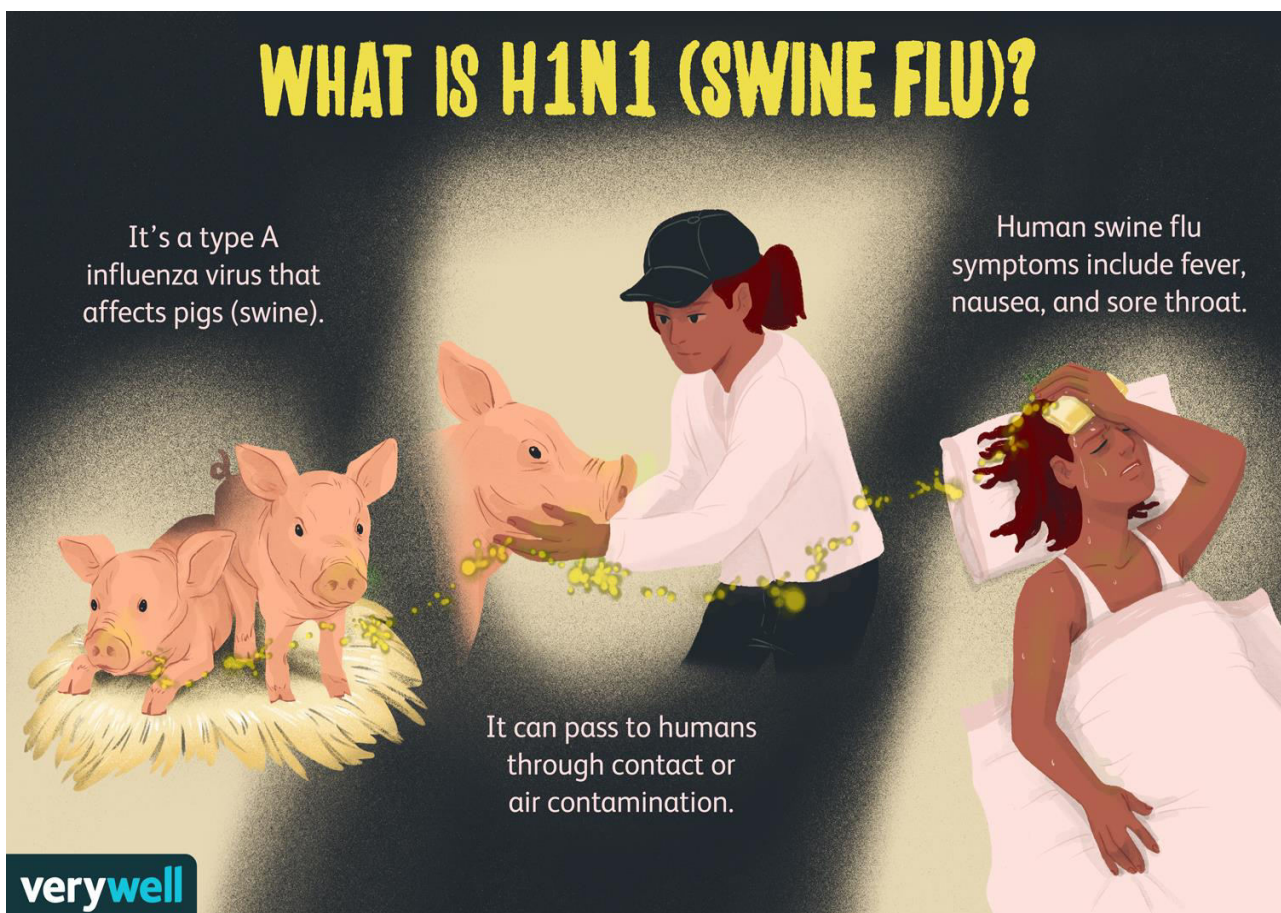
2009 flu pandemic in India was the outbreak of **swine flu** in various parts of India. Soon after the outbreak of H1N1 virus in the United States and Mexico in March, the Government of India started screening people coming from the affected countries at airports for swine flu symptoms.[1] The first case of the flu in India was found on the Hyderabad airport on 13 May, when a man traveling from US to India was found H1N1 positive.[2]



Subsequently, more confirmed cases were reported and as the rate of transmission of the flu increased in the beginning of August, with the first death due to swine flu in India in Pune,[3] panic began to spread. As of 24 May 2010, 10193 cases of



swine flu have been confirmed with 1035 deaths. The only known drug to work against H1N1 (Tamiflu) was not sold in general medical stores, to prevent the virus from developing antibiotic resistance due to excessive use. The government feared that people would pop in pills for no reason, thereby making the virus resistant to its only known cure. The problem facing the state machinery was the fact that flu infected cases were coming from across the country. Generic version of Tamiflu (Oseltamivir) was made available in Indian market, after several months of swine flu attack. Natco Pharma and Strides Arcolabs have launched their generic version of Oseltamivir, Natflu and Starflu. These drugs were made available to the customers directly under prescription. On 8 August 2010 the Indian government reported there had been 1833 deaths from swine flu in the country. On 18 October 2010 a biotechnology firm announced the launch of India's first indigenously developed cell culture H1N1 Swine Flu Vaccine under the brand name HNVAC.[5,6]



A new strain of influenza virus, officially named the "new H1N1", first identified in April 2009, and commonly called "Swine flu" initially spread in Mexico and then globally by transmission. It is thought to be a mutation of four known strains of the influenza A virus, subtype H1N1: one endemic in (normally infecting) humans, one endemic in birds, and two endemic in pigs (swine). Experts assume the virus "most likely" emerged from pigs in Asia, and was carried to North America by infected persons. The virus typically spreads from coughs and sneezes or by touching contaminated surfaces and then touching the nose or mouth. Symptoms, which can last up to a week, are similar to those of seasonal flu, and may include fever, sneezes, sore throat, coughs, headache, and muscle or joint pains. The first death was a 14-year-old girl in Pune, Maharashtra. On 8 and 9 August a 43-year-old man in Ahmedabad, Gujarat, a 42-year-old teacher in Pune and a 53-year-old woman in Mumbai died. On 10 August a 53-year-old doctor in Pune and a 4-year-old in Chennai died. On 11 August a 7-year-old girl in Vadodara, Gujarat died. On 13 August, a 26-year-old woman became Bangalore's first victim of swine flu. An eleven-month-old boy, a 75-year-old woman and a 37-year-old woman died taking the toll in Pune, severely hit by the virus, to 15 and across the country, to 24. A lady having a young daughter of 5 yrs died near Mumbai in Khopoli on 14 August. On 13 August, three people died at different hospitals in Bangalore,

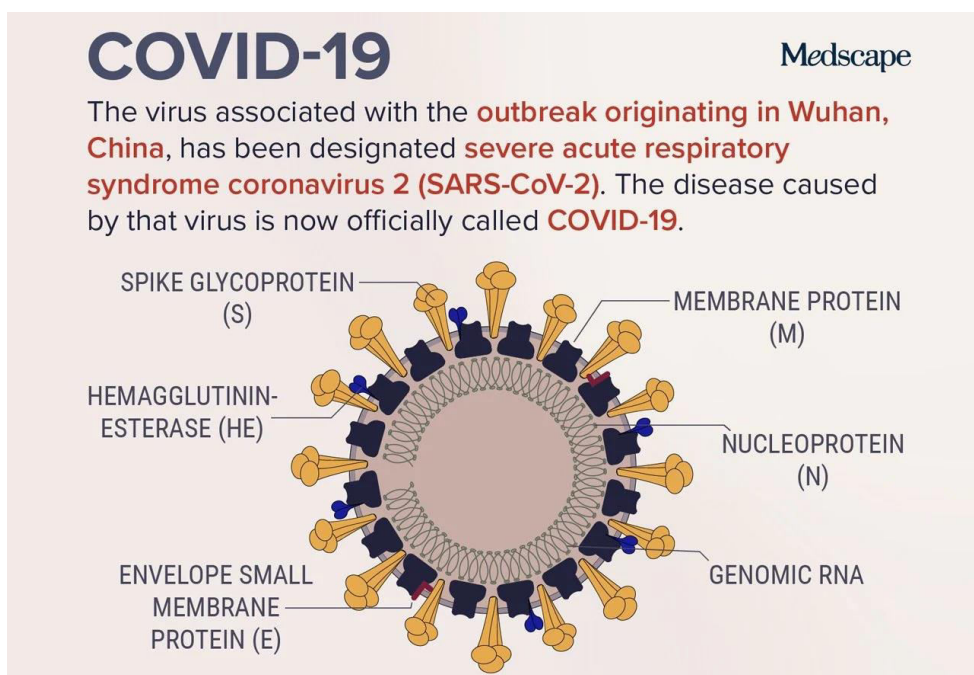


according to the reports.[12]Swine flu death toll crosses 500 in India. New Delhi, 10 November—The death toll of the H1N1 flu in India is rising in leaps and bounds with 18 new fatalities reported Monday. Within the short space of a little over three months, the mortality figure has shot up to 503.[7,8]

Influenza A H1N1 status-As of 8 August 2010 there had been 1833 deaths from H1N1 swine influenza reported.As of 31 January the death toll of A/H1N1 influenza was 1229, and the number of laboratory confirmed cases of A/H1N1 (including uncomplicated cases) was 28,810. As of 8 February, the number of confirmed deaths due to A/H1N1 in India had risen to 1270. As of 12 February, the number of confirmed deaths from A/H1N1 pandemic influenza had risen to 1302. As of 24 February 1357 confirmed deaths from H1N1 have been reported in India, and 29,583 confirmed cases of H1N1 have been reported.As of 12 March 2010, 1404 confirmed deaths from H1N1 influenza have been reported, and at least 29,904 laboratory-confirmed cases of H1N1 have been reported. India has reported 1000 cases of swine flu (H1N1) virus, including 59 deaths which occurred in spring of 2012

Present status of Covid-19

Following a surge in cases of coronavirus disease 2019 (COVID-19) in June 2020, India became the third-worst affected country worldwide.



The spread of COVID-19 in India was initially characterized by fewer cases and lower case fatality rates compared with numbers in many developed countries, primarily due to a stringent lockdown and a demographic dividend. However, economic constraints forced a staggered lockdown exit strategy, resulting in a spike in COVID-19 cases. This factor, coupled with low spending on health as a percentage of gross domestic product (GDP), created mayhem because of inadequate numbers of hospital beds and ventilators and a lack of medical personnel, especially in the public health sector. Nevertheless, technological advances, supported by a strong research base, helped contain the damage resulting from the pandemic. Following nationwide lockdown, the Indian economy was hit hard by unemployment and a steep decline in growth. The early implementation of lockdown initially decreased the doubling rate of cases and allowed time to upscale critical medical infrastructure. Measures such as asymptomatic testing, public-private partnerships, and technological advances were essential until vaccine was developed and deployed in India.[9,10]

The spread of COVID-19 in India was initially characterized by lower case numbers and fewer deaths compared with numbers in many developed countries. This was mainly due to a stringent lockdown and demographic factors.



However, economic constraints forced a staggered lockdown exit strategy, resulting in a spike in COVID-19 cases in June 2020. Subsequently, India became the third-worst affected country worldwide. Low spending on health as a percentage of gross domestic product (GDP) meant there was a shortage of hospital beds and ventilators and a lack of medical personnel, especially in the public health sector. Nevertheless, technological advances, supported by a strong research base, helped contain the health and economic damage resulting from the pandemic. In the future, measures such as asymptomatic testing, public-private partnerships, and technological advances will be essential until a vaccine against COVID-19 can be developed and rolled-out in India.



During March, cases began to be reported across India. Despite the aggressive measures taken by the Indian government to prevent and contain the epidemic, as of 12 August 2020 there were 652,473 active cases, 1,695,860 recovered cases, and 47,138 deaths due to COVID-19. India is the world's second-most populous and the third-worst affected country by COVID-19 to date (in terms of the total number of confirmed COVID-19 cases). Therefore, it is relevant to review how the country has fought the pandemic since its onset. Against this backdrop, the focus of this paper is to assess the impact of public policy and technological interventions on COVID-19 trends in India. First, India's diverse demographic profile followed by the status of health and hospital infrastructure prior to the COVID-19 pandemic are presented. Second, the impact of the pandemic on India and the measures taken by the government in response are discussed. Third, the technological advances that catalysed the overall recovery process are summarised. Finally, the economic impact of the pandemic is presented, followed by concluding observations with regards to the impact of these measures, their limitations and the way forwards.[11,12]

Ayushman Bharat

While diagnosis and treatment were free for 500 million beneficiaries of the health insurance scheme 'Ayushman Bharat' in public hospitals, the costs of tests (USD 44) and treatment were capped at private facilities.





For example, the Delhi government capped isolation facilities at USD 160–200 per day for isolation beds, USD 260–350 per day for an ICU bed without a ventilator, and USD 300–360 per day for an ICU bed with a ventilator. Other changes in India included contingency plans for an anticipated surge in cases. Railway coaches (2,500) were converted to isolation wards, making available an additional capacity of 40,000 beds . Paramedical staff, including volunteers, ex-service people, homeopathic and ayurvedic practitioners, medical students, teachers, doctors (including retired doctors), and others, were identified at municipal, district and state levels to create an online data pool of 15,896,093 human resources for various activities required to fight COVID-19; each person was designated a ‘COVID warrior’, and a surveillance policy of one COVID warrior per 250 citizens was devised . With the increased supply of infrastructure and human resources, it was equally important to match the demand for medical equipment and medicines. With the involvement of private hospitals, the demand for personal protective equipment (PPE) increased.[13,14]

Zonations /zonal classification

Geographical areas within a city were classified as red (more than 15 confirmed cases on a given day), orange (up to 15 confirmed cases), or green (no cases) zones, based on levels of infections . Containment zones were geographical areas where a cluster of confirmed cases (more than six) was found, especially in cramped locations where social distancing was not realistically possible. Specific guidelines in these areas include:

- Entry only after a taking COVID-19 preventive drug.
- Designated helpline numbers for the delivery of essential items, sanitisation drives, and health check-ups.
- Restricted movement to other zones, with violators booked under sections of the Disaster Management Act (2005), the Epidemic Diseases Act (1897), and the Indian Penal Code (IPC).
- Zones were reassessed within four weeks from the discharge of the last confirmed case.

This concept of zonal classification was based on the steep learning curve experienced during the 1918 influenza A virus (H1N1) pandemic in India. One of the lessons learned during this earlier pandemic was that even though the spread of a virus among the Indian population could be high, it is unlikely to affect all parts of the country uniformly .[17,18]

Break the chain campaign

Kerala launched the ‘Break the Chain’ campaign as a means to highlight the importance of hygiene (handwashing) and social distancing. Standard operating procedures covered aggressive contact tracing; infection control for ambulances; careful management of biomedical waste and handling the spillage of body fluids; disinfection and sterilisation; management of dead bodies; use of PPE; and sample collection and transportation. Transparency in communication was maintained, in the form of reporting daily confirmed cases, revised guidelines related to quarantine, hospital admissions, and discharged cases.[15,16]





Vaccination

India is among the largest manufacturers of vaccines in the world and was the fifth country to isolate the strain of SARS-CoV-2, the virus that causes COVID-19 . India could play an important role in terms of mass-producing a vaccine at an affordable cost . Out of seven Indian firms racing to develop a vaccine, two had vaccine candidates already in the human trial phase as of August 2020 . Around 12 August, India's proportion of recovered COVID-19 cases of 70%, was higher than the average (69%) of the top-five countries (by total number of COVID-19 confirmed cases), representing more than 1.6 million recovered cases in absolute terms. This was testimony to the technological advances applied at scale against the backdrop of lockdown measures. Furthermore, research advances, in the form of scaling-up of convalescent plasma therapy, where blood from individuals who have recovered from COVID-19 is given to other infected individuals to help them recover , gave an impetus to the treatment process.[19,20]



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