

## **The Role Of Historical Inquiry In Developing Pandemic-Mitigation Strategies For The Twenty-First Century In India**

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### **Abstract**

The Pandemic is derived from Greek term Pan + demos mean all people. i.e all people are affected by some cause. It has a long history, that different timings in the past the people are affected with different critical health situations and not to know how to protect themselves with these critical illness. The present paper is about the comparison of different pandemic situations in the world. Here we observe the number of deaths at that time in India.

**Key words:** Pandemic, Influenza, Dengue, Meningococcal Meningitis, Chikungunya, Jaundice, Nipah, Saar's, corona-19.

### **Introduction**

Maximum life span for humans is a measure of the maximum amount of time one or more members of a population have been observed to survive between birth and death. The term can also denote an estimate of the maximum amount of time that a member of a given species could survive between birth and death, provided circumstances that are optimal to that member's longevity. Pandemic preventing the life span of a human. Pandemic times are challenging the human for their life. From the last millennia people are faced different endemic years. These timings people had routine down. They could sail their time to an auto pilot, a thought as to how to fill their time, and how to survive. Such a time they faced continuously several years. Finally after Unfilled loss they achieved a solution to face that epidemic. The time is repeating in their life after some decades, so it is need to understand and remained past losses and that time activities and do need full to get reduce the loss.

When the enemy is invisible and rapidly advancing, human reactions tend to follow set patterns. So what can the Plague and Spanish Flu outbreaks teach us about social distancing and responsibility It is a common unexpected outbreaks to occur in India, it is the lack of sanitation and poor public health systems [1,2]. Cholera outbreaks have been due to the breakdown of sanitation in India [3]. The study of Cristopher, showed that the epidemic trends need to modify when the transmission exceeds magic figure [4]. Death rate is usually high in pandemics than epidemics a study on comparing the mortality rate of influenza [5]. As far as India is concerned, there are only two major pandemics are significant throughout history. Cholerain 19th century and the influenza pandemic in early 20th century [6,7]. The outbreak hepatitis E virus analyzed [8] explained the need of purification water.

### **21 st century epidemic days**

**a. INFLUENZA VIRUS (1918):** 1918-most severe pandemic in recent history. It is caused by H1N1 virus with genes of avian origin. it was first identified in military personnel in spring 1918 of United States. It was spread globally between 1918-1919. Approximately 500 million people were dead globally. Mortality was high in people younger than 5 years old, 20-40 years old, and 65 years and older. The high mortality in healthy

people, including those in the 20-40 year age group, was a unique feature of this pandemic. This virus caused there are 20 million people dead in India.

Table1: Year wise analysi of INFLUENZA in India

ge group	Influenza total (95% CI)	Influenza A(H3N2) (95% CI)	Influenza A(H1N1pdm09) (95% CI)	Influenza B (95% CI)
<b>&lt;5 years</b>				
2010	10.5 (0-27.4)	1.1 (0-2.2)	5.8 (0-18.9)	4.8 (0-15.5)
2011	12.5 (1.1-25.8)	8.1 (0-17.2)	2.0 (0-6.3)	3.1 (0-9.9)
2012	7.4 (0.0-19.1)	1.5 (0-3.1)	2.8 (0-8.9)	4.1 (0-13.2)
2013	8.7 (0.4-17.9)	6.4 (0-13.2)	1.9 (0-6.0)	1.0 (0-3.3)
Average	9.8 (0-21.8)	4.3 (0-10.0)	3.1 (0-9.6)	3.2 (0-10.0)
<b>5-64 years</b>				
2010	1.4 (0-3.0)	0.1 (0-0.2)	1 (0-2.3)	0.4 (0-1.4)
2011	1.0 (0.0-2.3)	0.5 (0-1.3)	0.4 (0-0.8)	0.3 (0-0.9)
2012	1.0 (0-2.3)	0.1 (0-0.3)	0.6 (0-1.3)	0.4 (0-1.4)
2013	0.9 (0.0-2.0)	0.5 (0-1.3)	0.4 (0-0.9)	0.1 (0-0.4)
Average	1.1 (0-2.4)	0.3 (0-0.8)	0.6 (0-1.4)	0.3 (0-1.0)
<b>≥65 years</b>				
2010	56.4 (7.4-108.4)	4.3 (0.9-7.6)	55.4 (13.9-95.5)	5.1 (0-30.9)
2011	55.4 (19.1-96.9)	35.4 (7.7-63.8)	20.9 (5.3-36.0)	3.4 (0-20.8)
2012	35.1 (2.2-78.2)	7.1 (1.6-12.7)	31.6 (8.0-54.4)	5.1 (0-31.5)
2013	57.7 (19.5-95.0)	35.9 (8.1-63.7)	23.7 (5.9-41.3)	1.5 (0-8.9)
Average	51.1 (9.2-93.0)	20.8 (0.8-40.8)	32.7 (7.0-58.4)	3.8 (0-17.7)

**b. PLAGUE (2002):** The Plague was spread in Shimla district of Himachal Pradesh of Northern India on 19th February 2002. It is a small less serious epidemic. when the plague was detected, immediate measures were taken that lead to further control of the epidemic like fumigation, evacuation, and chemoprophylaxis . Year wise deaths in India was shown in the figure.

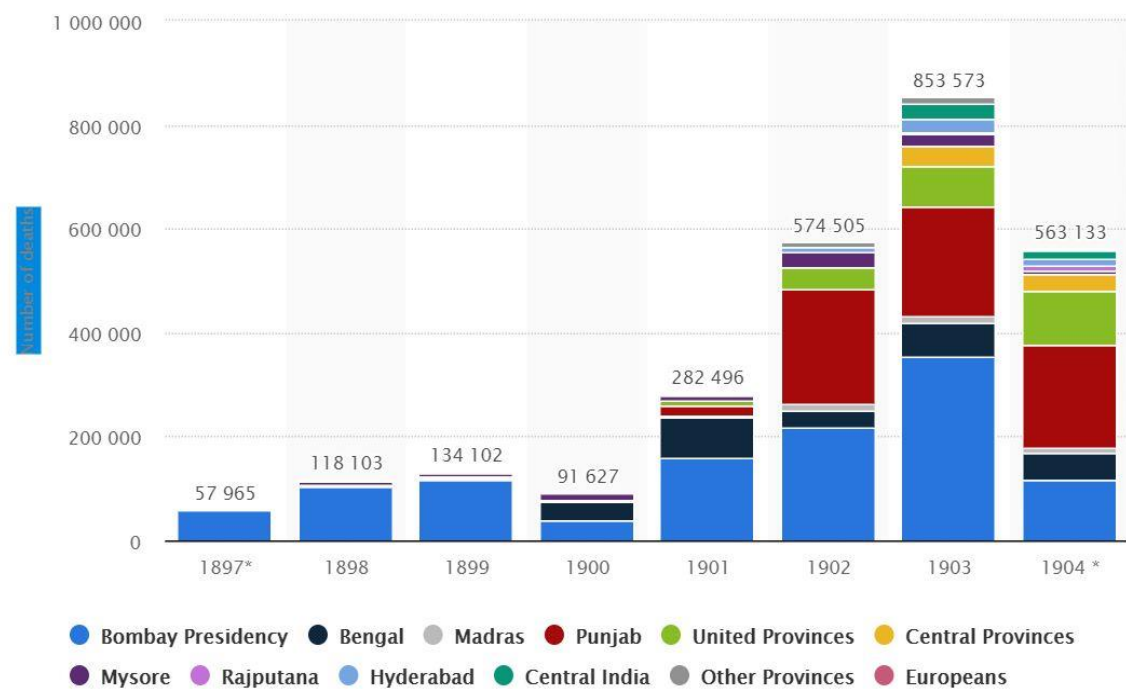


Fig1: Year wise deaths of Plague in india

c. **DENGUE(2006)** : In the 2006 dengue outbreak in India, cases of dengue fever were reported first from New Delhi in early September and by the end of September other states also started to report deaths. At least 3613 confirmed cases of dengue fever were reported and over 50 people died in the outbreak.

Table 2: yearly state wise analysis in india

Sl. No.	Affected States/UTs	2015		2016		2017		2018		2019		2020		2021 (Till 31st March )	
		C	D	C	D	C	D	C	D	C	D	C	D	C	D
1	Andhra Pradesh	3159	2	3417	2	4925	0	4011	0	5286	0	925	0	378	0
2	Arunachal Pradesh	1933	1	13	0	18	0	1	0	123	0	1	0	0	0
3	Assam	1076	1	6157	4	5024	1	166	0	196	0	33	0	2	0
4	Bihar	1771	0	1912	0	1854	0	2142	0	6712	0	493	2	0	0
5	Chattisgarh	384	1	356	0	444	0	2674	10	722	0	57	0	1	0
6	Goa	293	0	150	0	235	0	335	1	992	0	376	0	62	0
7	Gujarat	5590	9	8028	14	4753	6	7579	5	18219	17	1564	2	164	0
8	Haryana	9921	13	2493	0	4550	0	1898	0	1207	0	1377	0	3	0
9	Himachal Pradesh	19	1	322	0	452	0	4672	7	344	2	21	0	1	0
10	J & K	153	0	79	1	488	0	214	0	439	0	53	0	0	0
11	Jharkhand	102	0	414	1	710	5	463	1	825	0	79	0	0	0
12	Karnataka	5077	9	6083	8	17844	10	4427	4	16986	13	3823	0	510	0
13	Kerala	4075	25	7439	13	19994	37	4083	32	4652	16	4399	5	342	0
14	Madhya Pradesh	2108	8	3150	12	2666	6	4506	5	4189	2	806	0	31	0
15	Meghalaya	13	0	172	0	52	0	44	0	82	0	4	0	0	0

16	Maharashtra	4936	23	6792	33	7829	65	11011	55	14907	29	3356	10	335	0
17	Manipur	52	0	51	1	193	1	14	0	359	0	37	0	0	0
18	Mizoram	43	0	580	0	136	0	68	0	42	0	67	0	0	0
19	Nagaland	21	1	142	0	357	0	369	0	8	0	1	0	0	0
20	Odisha	2450	2	8380	11	4158	6	5198	5	3758	4	496	0	67	0
21	Punjab	14128	18	10439	15	15398	18	14980	9	10289	14	8435	22	0	0
22	Rajasthan	4043	7	5292	16	8427	14	9587	10	13706	17	2023	7	645	0
23	Sikkim	21	0	82	0	312	0	320	0	444	0	11	0	2	0
24	Tamil Nadu	4535	12	2531	5	23294	65	4486	13	8527	5	2410	0	1704	0
25	Tripura	40	0	102	0	127	0	100	0	114	0	24	0	0	0
26	Telangana	1831	2	4037	4	5369	0	4592	2	13331	7	2173	0	143	0
27	Uttar Pradesh	2892	9	15033	42	3092	28	3829	4	10557	26	3715	6	93	0
28	Uttarakhand	1655	1	2146	4	849	0	689	3	10622	8	76	1	0	0
29	West Bengal	8516	14	22865	45	37746	46			NR	NR	NR	NR		
30	A& N Island	153	0	92	0	18	0	49	0	168	0	98	0	31	0
31	Chandigarh	966	1	1246	0	1125	0	301	0	286	0	265	0	0	0
32	Delhi	15867	60	4431	10	9271	10	7136	4	5077	0	1269	0	22	0
33	D&N Haveli	1154	0	4161	2	2064	0	493	0	1491	2	248	0	14	0
34	Daman & Diu	165	0	89	0	59	0	163	0	625	2	71	0	0	0
35	Puduchery	771	0	490	2	4568	7	592	2	2030	2	633	1	138	0
	Total	99913	220	129166	245	188401	325	1E+05	172	157315	166	39419	56	4688	0

**d. SARS (2003) :** Severe acute respiratory syndrome (SARS) is a viral respiratory disease caused by a SARS-associated coronavirus. It was first identified at the end of February 2003 during an outbreak that emerged in China and spread to 4 other countries. India had remained largely unaffected by SARS outbreak. India reported three "probable cases" of SARS - one each from West Bengal, Karnataka and Gujarat. The probable cases were those who had tested positive in the PCR (polymerase chain reaction) test, as per WHO's existing guidelines.

There were 10 more "suspected" cases of SARS infection - three from Karnataka, two from Maharashtra, and one each from Delhi, Tamil Nadu, Chhattisgarh and Rajasthan. Only one "probable" case was diagnosed to have pneumonia. Another step that was undertaken was to expand a five-year-old pilot project by the National Surveillance Program for Communicable Diseases (NSPCD) from five districts in 1997 to over 100 districts.

This is how India found all its probable and suspect cases of SARS. All the three probable and nine of the 10 suspect cases of SARS were people who had to India from other countries. The other suspect case had never gone out of India. The authorities traced and quarantined 60 of her contacts. No further cases were reported.

**e. Meningococcal Meningitis Epidemic (2005)**

In starting 2005, there is sudden growth had been noted in meningococemia and meningococcal meningitis cases in India. These cases were reported the surrounding states of Uttar Pradesh and Maharastra and Delhi. Almost 430 cases of meningococcal meningitis were reported as of June 2005. Case management, ferreting out through surveillance was aimed at prevention of spread. Between 2014, 2015 there are total of 16,217 cases and 300 deaths were recorded in India.

**f. Chikungunya (2006):** It is a mosquito-borne viral disease first described during an outbreak in southern Tanzania. Almost 3.5 million cases of Chikungunya were disclosed in Ahmedabad 2006 with 2,945 deaths estimated. The mortality rate in 2006 epidemic was considerably increased when compared to the

previous four years. There is another epidemic in South India In December where the three states of Andhra Pradesh, Tamil Nadu and Karnataka were affected. The flatulent nature of this epidemic was attributed to the herd immunity. Through television and print media played major efforts to realise the need of mosquito control.

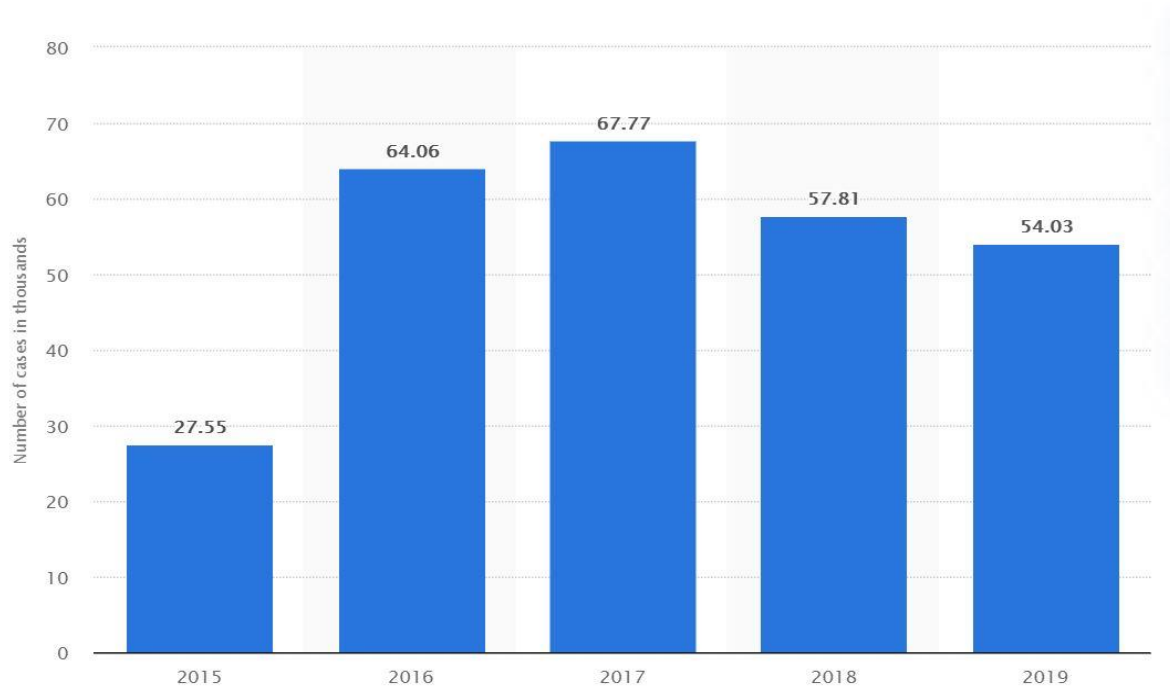


Fig2: Number of of Chikungunya cases in india year wise

**g. Gujarat Jaundice epidemic (2009):** The witness of the outbreak is Modasa town in Gujarat of hepatitis B in 2009. This is very significant because almost all outbreaks of viral hepatitis in India are due to hepatitis E which is feco-orally transmitted. This is a long-lasting epidemic. It is controlled by mass public awareness and health actions.

**h. Odisha Jaundice Epidemic (2014):** November 2014 the outbreak started in Kantalbai, a remote village in Odissa. This led to district level investigation and was confirmed as jaundice caused by the Hepatitis E virus. This is spread in polluted area and transmitted enterically also affected several people, especially of the low socioeconomic category. Sanitation and clean water was proposed as the control measure for Surveillance.

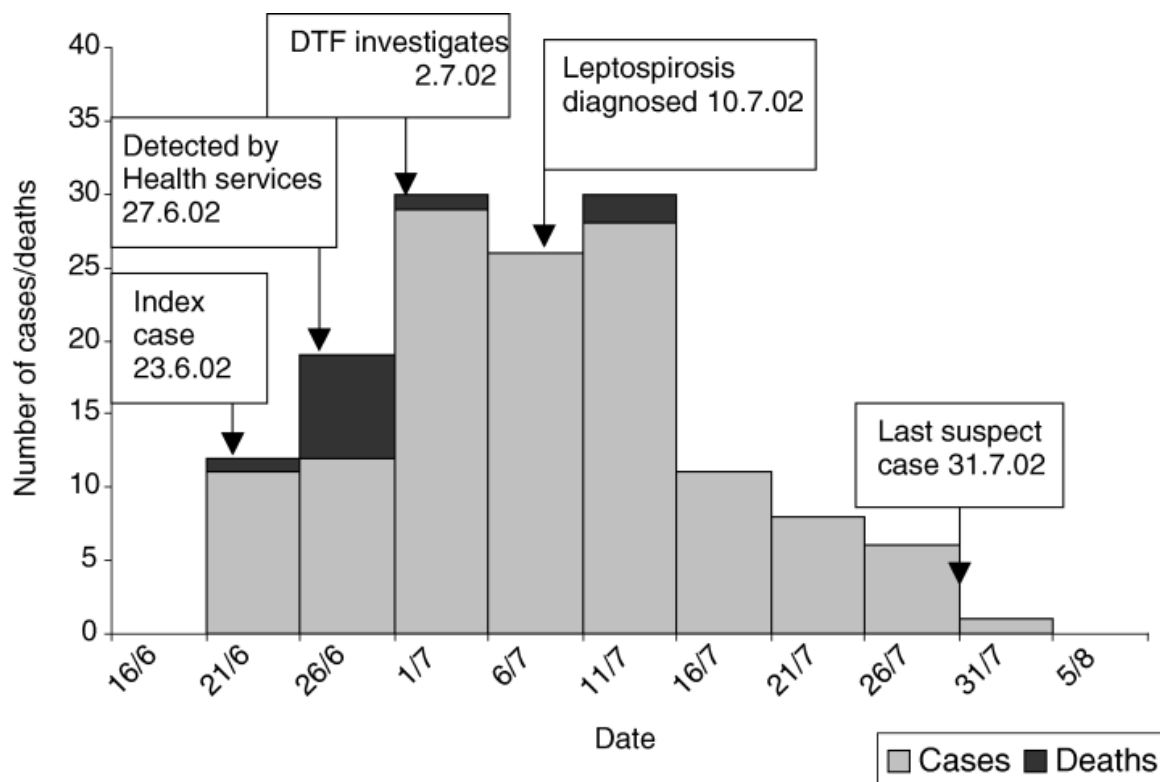


Fig3: Number of Odisha Jaundice Epidemic cases and deaths with date wise

i. **Nipah Out break (2018):** This virus was first noticed in the late 1990s in Malaysia and Singapore. The intrinsic host for this disease is the fruit bat. this transmit from person to person through direct contact. This Nipah virus began in Kozhikode District May 2018 Kerala. The first one reported in Kerala and known to third one in India, Nipah virus is the most recent previous outbreak being in 2007. “Spread of awareness about this infection, Isolation of the infected, post-outbreak surveillance led to the control of this outbreak” As of May 2018 about 700 human cases of Nipah virus were estimated to have occurred, and 50 to 75 percent of those infected died. In May 2018, an outbreak of the disease caused 17 deaths in the Indian state of Kerala.

j. **COVID-19 (2019):** At present people from all over the world have been suffered by coronavirus disease 2019 (COVID-19), which is the tenth pandemic in 21<sup>st</sup> century. The first case found at Wuhan City, China, since late December 2019. The first case of COVID-19 in India, which originated from China, was reported on 30 January 2020. India currently has the largest number of confirmed cases in Asia. As of May 2021, India has the second-highest number of confirmed cases in the world (after the United States) with nearly 25,772,440 reported cases of COVID-19 infection and 287,156 deaths, there are 22,355,440 people are recovered from covid as of 20 May 2021,

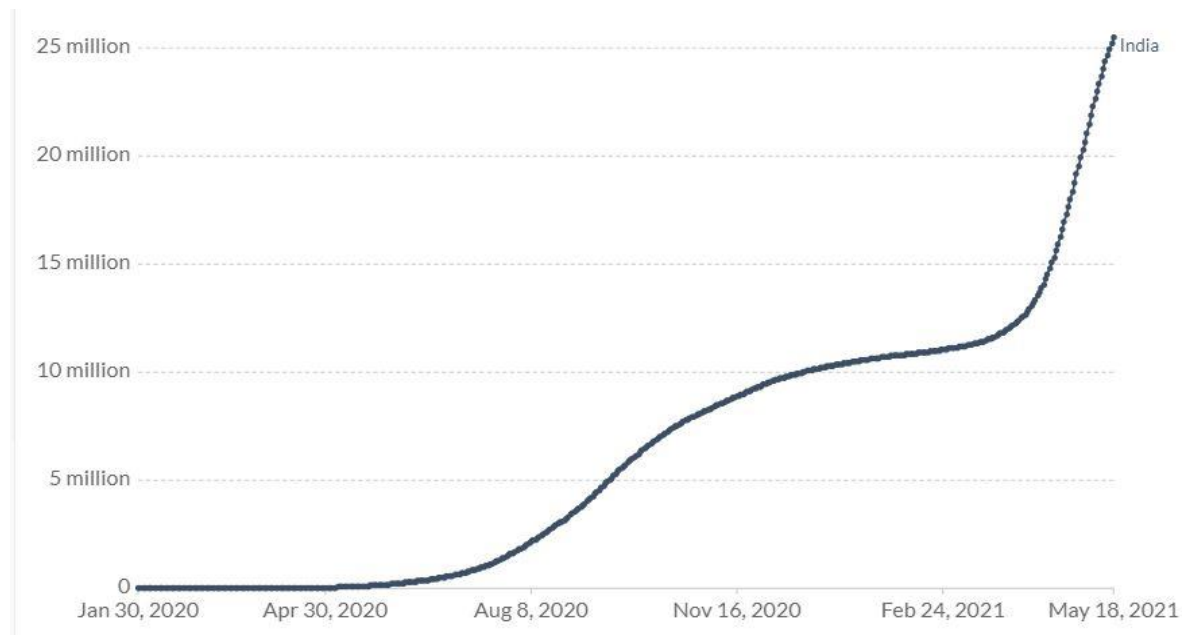


Fig4: Number of confirmed cases from 30<sup>th</sup> January 2020 to 18<sup>th</sup> May 2021



Fig5: Daily new confirmed cases maximum effected countries and the state Maharashtra

**Conclusion:** It is Observed that epidemics are happening cyclically in India. Indian population is very high i.e second highest population in the world. As comparing the population epidemics effect is less in India. That is because living and food habits of the people. India has good efficient researchers in health and medicine. It is observed that recent covid-19 vaccine also having Indian roots. India has stood solid through several pandemics through epidemics. It is also observed that the wide spread of many diseases due to the mere lack of sanitation and crowded environment [1,2]. The tropical climate and the seasonal rains in India is yet another important factor contributing to several vector-borne infections outbreaks in the past and many more to come. Though it has been difficult to conclude all the epidemics and pandemics due to insufficient data to preservation, doctors have put their sincere efforts notable ones. This work is a hope that medical professionals understand where they had gone wrong in controlling an outbreak in the past and how to lead. It is also useful to the people to know about the different epidemics and how to face the unexpected epidemics. It is note that India will have to face several more such outbreaks in coming days in that time. It should give importance to control of spread is number one priority of the doctors and other health care workers..

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