# Spanish Flu 1918: An Indian Experience

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***Abstract***

*The historians have not paid adequate attention in recording mortality rate from epidemics, however, it killed more people than wars. Spanish flu, one of the greatest epidemics in human history is the best example of it. India registered the largest death rate in the Spanish flu broke out 1918. Many villages were depopulated and the Central Province and Berar was worst hit. Around six percent of the population died in this province alone. The previous studies on the cause of large number of deaths in India found that high density of population was one of the reasons. But the present study found that death rate was less in densely populated areas buthigher in sparsely populated areas based on the analysis of the Census reports and the reports of the sanitary commissioners. It was found that one of the main reasons was poor resisting power of the Indians to the influenza virus due to non-exposure of Indians to the virus of 1830s or its variant type. Secondly, shortage of food due to the bad monsoon of 1918 and sky-rocketing prices of essential commodities consequent upon the First World War denied necessary vitamins to develop immunity among the people. Further, the outbreak of cholera and bubonic plague along with the Spanish flu increased the mortality rate. The mortality rate was higher in Indian villages rather than towns because the poverty ridden villagers could not afford the proper housing and clothing nor aware of the importance of social distancing, use of sanitizer and mask so as to prevent the spread of virus.*

**Keywords***:* India, Flu, Spanish, Virus, Pandemic

## Introduction

In all the history of influenza there is one event standing out all other epidemics-the great pandemic of so called Spanish influenza of 1918-19. The Spanish flu was a global disaster as a consequence of transactional and novel nature of the First World War. It was the most deadly epidemic in history. The mortality effect of the 1918 influenza epidemic was higher in India than anywhere else on the planet. The epidemic swept across India in a matter of three months, and that the impact varied widely, being worst in Central Provinces and Berar and having very little impact in Bengal. The influenza epidemics have not been well documented since most of the historians interested in wars than in diseases although the latter killed more people. The previous studies pointed to the high density of population as one of the reasons

behind the high death rate India. In this background, an analysis of whether the density of population has caused high mortality due to the Spanish influenza based on the hitherto untapped census reports and the reports of the sanitary commissioners has attempted here followed by an analytical inquiry of high mortality rate in India. Further, a study of the behaviour of the virus helps to some extent to anticipate likely future developments. It is sure that the influenza epidemic may be with us for many years to come and significant mortality. It has killed people in thousands in recorded history and still we can do little to protect world community from the influenza. History teaches us both how a virus could cause a pandemic, and what measures we could plan and energize to confront local and global outbreaks.

Influenza epidemic has been recorded throughout history. Most of the deadliest pandemics in history spread when isolated populations came into sustained contact with one another and through the cross –species transmission of microorganisms from animals to humans, and vice-versa. Most of the worldwide spread pandemics had their point zero in the continental Asia, and Africa from where the virus had spread to the rest of the world[1]. The three great plague pandemics had different geographic origins and paths of spread. In 541 A.D., the Byzantine Empire was caught by bubonic plague otherwise known as Justinian plague probably transmitted with shipments of grain from North Africa to Egypt and Mediterranean to feed the expanding cities of empire[2]. Likewise, the black death of the 1347 originated in Asia moved across the Mediterranean as Italian traders began plying the waters between the Black sea and Sicily with greater frequency[3]. In the sixteenth century the Spanish invasion of the Aztec and Incan empires devastated aboriginal populations of the new world in several epidemics of small pox and influenza[4]. Likewise, Asiatic cholera had long been endemic in India before it was transmitted to the Middle East and then Europe by a British Military expedition from the subcontinent to Oman in 1821[5]. There were 13 fairly severe epidemics during the 18th century and 12 during the 19th century. Probably eight of

[1]Gregory Tsoucalas et.al;(2016), The 1918 Spanish Flu Pandemic, The Origins of the H1N1 Virus Strain, A Glance in History, *European Journal of clinical and Biomedical Sciences*, 2:4, 23.
[2]William H.M.C. Neill.(1998),*Plagues and Peoples*, (rev. ed.),Toronto, Anchor Books: 137
[3]Philip Ziegler. (1998),*The Black Death,*New York, John Day Co, 13-17.
[4]Alfred W. Crosby. (1967) 'Conquistador Y Pestilencia: The First New World Pandemic and the Fall of the Great Indian Empires, *Hispanic American Historical Review*, 47:3, 321- 37.
[5]R. Pollitzer. (1959). *Cholera*, Geneva: World Health Organisation, 19-21.

these 25 were influenza pandemics[6]. The third pandemic of the 1894 A.D originated in Yunnan in China and spread to Hong Kong and India, then to the rest of the world[7].

There were four pandemics in the 20th century due to the emergence of new subtype of influenza A virus. The morbidity and mortality rates varied greatly from epidemic to epidemic and from place to place during the same epidemic. Most of the time, the behaviour of influenza was unpredictable and it hindered our effort to prevent it. Given the historical link between war and epidemic disease, the public officials feared that a global war might bring new disease home to civilians' populations when First World War broke out in 1914. 'The trail of infected of armies leaves a sad tale of sickness amongst the women and children and non-combatants. Laws and regulations may govern the conduct of war, but disease and infections recognize no such laws and refuse to signal (sic) out the combatant only, wrote future Canadian Surgeon General Guy Carleton Jones in August 1914. 'Thus we see that war forces itself on the civilian, on the innocent child, on the non-combatant who stays at home… for who can tell, or count up, or even recognize the victims of war when it once places its hand on a country? [8]. Four years later, his worst fears were realized.

An influenza pandemic spread across the planet on an unprecedented level in 1918 infiltrating all areas of human habitation. The 1918 influenza is known as the mother of all pandemics[9]. This pandemic had been described as "the greatest medical holocaust in history"[10]. It killed more people than the Black Death, caused by the bubonic plague. It was proved that the 1918 pandemic was caused by an influenza A- subtype H1N1 progenitor strain. The pandemic engulfed the entire world in the name of Spanish flu. Since Spain did not censor news due to its neutral position in the First World War, the epidemic there was widely publicized, giving rise to the common but totally misleading term Spanish flu. Hence the most reliable scientific facts for the disease came from Spain giving the international community the false impression that Spain was the most affected zone. Thus the name "Spanish Flu" was wrongly defined due to the scientific observation and research made in Spain, while the first appearance of the virus had been made in somewhere else. In terms of

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[6]W.I.B. Beveridge.(1977).*Influenza, The Last Great Plague: An Unfinished Story of Discovery*, New York:Heinemann, 223.

[7]J. Frith. (2012)The History of the Plague - Part 1. The Three –Great Pandemics, *JMVH*, 20:2, 11-16.

[8] Mark Obsorne Humphries.(2014) The First World War and the Origins of the 1918: Influenza Pandemic,*War in History*, 21:1, 56

[9]Taubenberger, J.K andMorens D.M. (2006) 1918 Influenza: The Mother of All Pandemics, *Revista Biomedica*.17, 69-79.

[10]Waring J.I., (1971), *A History of Medicine in South Carolina 1900-1970*, Columbia: South Carolina Medical Association, 3

mortality rates and total persons killed, it would be more appropriate to label the epidemic as the India flu[11]. The outbreak was devastating, causing millions to die, more than the First World War causalities.

When the pandemic lashed, the Great powers were involved in world war. Hence, the medical and scientific professions were totally unprepared and ill-equipped to deal with the disease and could offer no effective way of combating or curing it[12] . Of course, the pandemic was not limited by political frontiers; the virus was carried along the varied routes of war, by oceanic sea lanes, along railway tracks, roads, river and footpaths. The disruption of war and the movement of troops helped to rapidly spread the infection. This pandemic probably took more lives than the plague that swept much of Asia and Europe in the mid fourteenth century[13].

There were three waves in less than twelve months. The first wave in the spring of 1918 was regarded as mild and the mortality was not unusually high and as usual the deaths were mostly in old people[14]. The spring wave did not even receive a mention in the index of 1918 volume of the journal of "the American Medical Association". The second wave came in the autumn of 1918 from September to October and it was the most spectacular outbreak of any disease for hundreds of years. It spread again geometrically, but this time only Australia remained unaffected and that until 1919[15]. An extraordinary feature of this wave was that half of the deaths were in the 20-40 age group and this was the pattern throughout the world[16]. The fact that the older population have had a better immune response due to their exposure to the previous Russian Flu pandemic of the 1889[17].The pandemic infected 3 percent to 5 percent of the world population including remote Pacific Islands and the Arctic[18]. The life expectancy dropped by about twelve years. The third wave early in 1919

[11]Robert J Barro et.al.( 2020), The Corona Virus and the Great Influenza Epidemic. Lessons from the "Spanish Flu" for the Corona Virus Potential Effects on Mortality and Economic Activity, *Economics Working Paper*, American Enterprise Institute, 2.
[12]Sandra M Tomkins.(1992) The Failure of Expertise Public Health Policy in Britain During the 1918-19 Influenza Epidemic, *Social History of Medicine*, 5:1, 435-54.
[13]K David Patterson and Gerald F Pyle, (1991)"The Geography and Mortality of the 1918 Influenza Pandemic", *Bulletin of the History of Medicine*, 65, 4.
[14]W.I.B. Beveridge.(1977).*Influenza, The Last Great Plague: An Unfinished Story of Discovery*, op. cit., 228.
[15]Gregory Tsoucalas et.al; (2016), The 1918 Spanish Flu Pandemic, The Origins of the H1N1 Virus Strain, A Glance in History, op. cit., 24.
[16]*Ibid*.
[17]L. Simonsen. et.al; (1998). Pandemic versus Epidemic Influenza Mortality: A Pattern of Changing Age Distribution. *Journal of Infectious Diseases*, 178:1, 53-60.
[18]Gregory Tsoucalas et.al.(2016). The 1918 Spanish Flu pandemic, the origins of the H1N1 virus strain, A Glance in History, op. cit., 23.

was rather less severe but the age distribution of deaths was similar. In the first wave it was the armies that suffered most severally. In the autumn and winter waves' soldiers and civilians alike died from secondary pneumonia infections. It was a strange and terrifying epidemic[19]. In the United States, the three waves caused 5, 48000 deaths, 0.5 percent of the population. In England and Wales, the official figure was 2,00,000. In Samoa and Alaska some 25 percent or more died. Throughout the world there were an estimated 20 million deaths and fifty times that number were ill. India reported the highest number of deaths. Original calculation in India put at 7,089, 694[20].

The epidemic killed a number of famous people, including the sociologist Max Weber, the artist Gustav Klimt, the child saints Francisco and Jacinta Marto and Frederick Trump, the grandfather of US President Donald Trump[21]. Many more famous people were survivors, including Mahatma Gandhi, Friedrich Hayek, General Pershing, Walt Disney, Georges Clemenceau and David Lloyd George. Franklin D. Roosevelt, US President and Joseph Joffre, French First World War General, survived the pandemic. The disease severally impacted U.S President Woodrow Wilson, whose impairment likely had a major negative effect on the negotiations of the Versailles Treaty in 1919. Thus, if the harsh terms imposed on Germany by this treaty led eventually to the Second World War, then the great influenza epidemic might have indirectly caused Second World War[22].

The governments attempted to prevent, contain and treat the influenza focusing on the tactical methods of medicine in dealing with the epidemic, such as institutional quarantine, closing public places, interning the ill and counselling people to combat the pandemic through aspirin and bed rest[23]. The advances made in medical knowledge over the course of the 19th and 20th centuries might be considered great successes in the progress towards a healthier future. Large number of deaths were reported from the colonies in Asia and Africa. Treatments efforts were taken by colonial administrators offered several explanations for the death rates in their colonies. Sometimes they blamed the subject peoples. The enlightenment and benevolence displayed by the European community were contrasted

[19]Ann H Reid et al.(2003) '1918 Influenza Pandemic Caused by Highly Conserved Viruses, with Two Receptor-Binding Variants, *Emergency Infectious Diseases'* IX, 1249-53.
[20]Andrew Balfour and Henry H. Scott. (1924)*Health Problems of the Empire*, London: Henry Holt & Co, 218.
[21]Robert J Barro et.al.( 2020), The Corona Virus and the Great Influenza Epidemic. Lessons from the "Spanish Flu" for the Corona Virus Potential Effects on Mortality and Economic Activity, 3
[22]*Ibid*.
[23]Siddharth Chandra, GoranKuljamin and Jennifer Wary.(2012). Mortality from the Influenza Pandemic of 1918-1919: The Case of India, *Demography*, 49:3, 857-865.

sharply with the qualities of superstition and ignorance manifested by indigenous groups[24]. While colonial administrators and missionaries saw the outbreak as an opportunity to prove the efficacy of western medical knowledge and the benevolence of the Christian God by safeguarding the indigenous population from the influenza.

The flu was a global disaster as a consequence of transactional and novel nature of the First World War. It was the most deadly epidemic in history. Both morbidity and mortality were usually high. Some deaths were the result of malnutrition and famine due to the war, while a great number were resulted due to the overdose of the aspirin drug[25]. The First World War created shortage of physicians especially in the civilian sector, as many had been recruited for service with the military[26]. Since the medical practitioners were away with the troops, only the medical students were left to care for the sick. The shortage was further added by the loss of physicians to the epidemic.

**Spanish Flu: A Historiographical Sketch**

Truly, this was one of the greatest catastrophes in human history. However, despite the fact that influenza pandemic has few historical rivals in terms of sheer loss of human life, it has not entered into the narrative of world history, nor indeed national histories, to the same extent that major wars or natural disasters have. Two distinct category of studies have emerged regarding the historiography of the influenza pandemic. The first category primarily focuses on the place of origin of the Spanish flu and the second category makes an analysis of the mortality rate from it.

There is no unanimous opinion among the scholars regarding the origin point of the epidemic. Certain scholars argue it was France while others Kanas and China. David Killingray observes that the flu of 1918-19 originated in France[27]. I.D. Mills observes that while the time and place of the first appearance of the new virus cannot be pinpointed, the earliest recorded outbreak seems to have been among army recruits at Camp Funston, Kansas where an epidemic began on 5 March 1918[28]. Edwin Oakes Jordan identifies China as the site

[24]Mathew Heaton and ToyinFalola.(2006). Global Explanations versus Local Interpretations: The Historiography of the Influenza Pandemic of 1918-1919 in Africa, *History in Africa,* 33, 205.
[25]Gregory Tsoucalas et.al. (2016). The 1918 Spanish Flu Pandemic, The Origins of the H1N1 Virus Strain, A Glance in History26.
[26]*Ibid*.,25.
[27]Howard Phillips and David Killingray.(2003)A New Imperial Disease: The Influenza Pandemic of 1918-19 and its Impact on the British Empire, *Caribbean Quarterly*, 49:4, 31.
[28]I.D. Mills. (1986) The 1918-19 Influenza Pandemic: The Indian Experience*, Indian Economic and Social History Review*, 23, 1-40

for the origin of the flu and observes that the 1918 flu most likely emerged first in China in the winter of 1917 -18 diffusing across the world as previously isolated populations came into contact with one another on the battlefields of Europe[29]. Robert G Webster argues that South East Asia had been linked to the origins of previous pandemic and, hence, it was believed that 1918 flu might have originated in Asia[30]. In recent years the Chinese origin theory gained new support from researches such as Christopher Langford, Dorothy A, Pettit and Janice Bailie, who uncovered evidence of a severe form of respiratory illness, initially diagnosed as pneumonic plague, circulating in the interior of China during the winter of 1917-18[31]. Langford Pettit and Bailie have used evidence mainly drawn from public health reports, newspapers, colonial office records, and Canadian and British sources from China, North America and Europe to support Chinese origin of 1918 pandemic.

However the flu originated in China the mortality rate was very low compared to other countries. Christopher Langford proposed that it was because many people in China had some previous exposure to the virus responsible for the outbreak or one closely related to it and so had a degree of immunity to the disease and it proved that the influenza virus responsible for the 1918-19 pandemic originated in China[32]. Mark Osborne Humphries expresses that while there are several theories explaining the origins of the 1918 influenza pandemic, the Chinese hypothesis makes the most convincing case and is supported by the strongest epidemiological and historical evidence[33]. W.I.B. Beveridge, opines thatall reports state that it started in China in autumn spreading to European countries, India and North America[34]. But James Joseph argues that there is no evidence to support theories that the spring wave began in China and was brought to North America and then to France by Chinese labourers on their way to the Western Front[35].

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[29]Edwin O Jordan. (1927), Epidemic Influenza: A Survey, Chicago, taken from K David Patterson and Gerald F Pyle. (1991) "The Geography and Mortality of the 1918 Influenza Pandemic", op. cit., p5.

[30]Robert G Webster. (2004). Wet Markets: A Continuing Source of Severe Acute, Respiratory Syndrome and Influenza, *Lancet*, CCCLXIII, 234-6.

[31]Christopher Langford.(2005). Did the 1918-19 Influenza Pandemic Originate in China?,*Population and Demographic Review,* XXXI, 473-505.

[32]*Ibid*.,491.

[33]Mark Obsorne Humphries.(2014) The First World War and the Origins of the 1918: Influenza Pandemic op. cit., p80.

[34]W.I.B. Beveridge.(1977).Influenza, The Last Great Plague: An Unfinished Story of Discovery, op. cit., p223-34.

[35] James Joseph King, "The Origin of the So-called Spanish Influenza" Med. Rec., Vol.94, 1918, pp632-33; Frank Macfarlane Burnet and Ellen Clarke, Influenza: A Survey of the Last Fifty Years in the Light of Modern Work on the Virus of Epidemic Influenza, London,1942, p71.

There is no unanimity among the scholars concerning the mortality rate from the Spanish flu too. The quantification of deaths and the incidence of the influenza, both globally and regionally, has been an evolving process, and is by far the most widely researched aspect of the pandemic. Andrew Balfour and Henry H Scott claims that influenza swept like pestilence from country to country, sparing no race, indifferent to climate[36] . The first major historical work providing the number of deaths on the influenza pandemic is Edwin Oakes Jorden's Epidemic Influenza: A Survey from 1927, in which he claims that the influenza pandemic caused the deaths of 21.6 million people worldwide[37]. Over time other researchers have determined that this estimate was inaccurate, and probably much too low. In 1977, W.I.B Beveridge estimates the total morality at between 15-25 million[38] . The most active compiler of data on the influenza in recent years has been K. David Patterson, who in 1991 estimated the total number of deaths worldwide at "a conservative total of roughly 30 million victims[39] . When the pandemic lashed, the Great powers were involved in world war. Hence, the medical and scientific professions were totally unprepared and ill-equipped to deal with the disease and could offer no effective way of combating or curing it. Johnson and Jeurgen revised the figures again in 2001 proposing that the worldwide death toll might have been as high as 30 millionconsiderably more than the total casualties of the First World War[40]. But Johnson and Muellerestimate varied widely in 2002, suggesting that between 15 and 100 million people died in a short span of about in a year[41].

There are problems in compiling statistics on the influenza pandemic. Firstly, the information gathered at the time of epidemic was incomplete. Many people were suffering and dying quickly for adequate tabulations to occur. Furthermore, many people in the colonized regions of the globe died without reporting their illness to authorities in any way. Moreover, the medical departments were under staffed in most of the areas and in 1918 even further depleted due to military needs resulting from the war. Undoubtedly the influenza pandemic of 1918-19 was the most devastating infectious disease to affect the world since the

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[36] Andrew Balfour and Henry H Scott. (1924).*Health Problems of the Empire*, op. cit., 215

[37]Edwin O Jordan, *Epidemic Influenza: A Survey* (Chicago 1927), taken from K David Patterson and Gerald F Pyle. (1991). The Geography and Mortality of the 1918 Influenza Pandemic", op.cit.,5.

[38]W.I.B. Beveridge.(1977).Influenza, The Last Great Plague: An Unfinished Story of Discoveryop. cit., 223-29.

[39]K David Patterson and Gerald F Pyle, (1991). The Geography and Mortality of the 1918 Influenza Pandemic op. cit., 1991, 19.

[40]Niall Johnson and Jurgen Mueller. (2002). Updating the Accounts: Global Mortality of the 1918-1920 'Spanish Influenza' Epidemic, *Bulletin of the History of Medicine*, 76, 105-15.

[41]*Ibid*.,105-115.

Black Death ravaged much of Asia and Europe in the mid- fourteenth century[42]. Another historian W.I.B. Beveridge expressed that in this pandemic, as in other influenza pandemic, people of all socio economic classes from kings to beggars suffered too much the same extent[43] . While the entire globe was affected by the pandemic, some regions suffered much more heavily than others, and in these regions it was the lower socio economic classes that bore the brunt of the burden. This was particularly true in India. Different areas of the globe suffered to different extents. Patterson claims that the highest death rates were generally from Africa and Asia, and the lowest from North America, Australia and Europe[44]. In less than a year the pandemic had run its course, ultimately responsible for somewhere between 30,000,000 and 50,000,000 deaths.

**Spanish Flu in India**

The Spanish flu battered the Indian subcontinent heavily in 1918-1919[45]. In the second wave in September 1918, the Spanish flu reached coastal cities of British India[46]. It killed sixty lakh people all over India in a few months[47]. In Bombay alone, nearly 13500 people died within four weeks of spread of influenza[48]. Communications played an important role in the spread of influenza. The movement of soldiers during the First World War, trade and commerce through ships and inland movement through postal network and human mobility channelized the disease from one area to the other[49]. In most of the places, the first instance of disease was reported with the movement of soldiers.

India faced the greatest devastation in terms of human mortality from influenza. K. Davis estimatedin 1951 that the mortality due to influenza of 1918-19 was around two crore in the Indian subcontinent, four times the official estimate[50]. The largest number of deaths in India were reported from the United Provinces, which was also the home to the largest number of population in British India. More than ten lakhs people died in the United Provinces forming around two percent of the total population of the province. The second

[42]Howard Phillips and David Killingray, (2003.), The Spanish Influenza Pandemic of 1918-1919, 3049
[43]W.I.B. Beveridge.(1977).Influenza, The Last Great Plague: An Unfinished Story of Discovery, op. cit., p31.
[44]K David Patterson and Gerald F Pyle. (1991).The Geography and Mortality of the 1918 Influenza Pandemic,op. cit., 13
[45]Howard Phillips and David Killingray, (2003.), The Spanish Influenza Pandemic of 1918-1919, op. cit., 22.
[46]Kenneth Hill. (2011). Influenza in India 1918, Excess Mortality Reassessed.*Genus*, 67-2, 9-29
[47]J.E. Park and K. Part, (1979), Text Book of Preventive and Social Medicine, Jabalpur:Bhanot Publishers,289.
[48] Ruby Bala.(2011). The Spread of Influenza Epidemic in the Punjab (1918-1919),*Proceedings of the Indian History Congress,* 72-1, 988.
[49]*Ibid.*
[50]K. Davis,(1951), The Population of India and Pakistan, Princeton: Princeton University Press, 36

largest number of deaths was reported from Bombay province where five percent of the population lost lives in six months. The highest mortality percentage recorded in the Central Provinces and Berar where around six percent of the total population died due to the pandemic[51]. The other prominent provinces were North West Frontier Province and Delhi losing four and six percent of its populations respectively. Its effect was comparatively less in eastern and south-eastern parts of the British India. Madras province lost 1.2 percent of its population. The eastern province of Bengal lost only around 0.4 percent which was lowest in British India. The provinces of Bihar and Orissa, Assam, and Burma lost on an average around one percent of their respective populations. The official estimate of mortality in India was more than five millions[52].The revised mortality figures have been ever upward from the six million officially estimated shortly after the epidemic to 17-18 million suggested by Mills in a recent study[53]. The Colonial and Foreign Offices reacted slowly to the news of influenza epidemics in the colonies. For instance, original calculation in India put at 7,089, 694[54]. But in 1991, it was estimated between 12.5 and 20 million[55].

Death totals for British India, which included modern Pakistan and Bangladesh, were by far the highest for any single country and provide the longest single source of uncertainly for Asian and world mortality totals. An Indian doctor who studied the pandemic put morbidity at 50-80 percent and suggested a total of 15 million deaths[56]. India had the largest case specific mortality rate of any large country, occurred roughly 40-50 percent of all deaths during the pandemic, and lost far more people than the approximately 8 million military causalities sustained by all of the belligerents in the First World War. In India, as elsewhere there was remarkable high age specific mortality rate among young adults in the age group between 20 and 40[57]. The Central Provinces and Berar were the worst sufferers from influenza in British India and it had a death rate of 57 persons per thousand which was highest in the British India. In the Central Provinces, it was reported that considerable difficulties were experienced in disposing the dead and a few places, corpses were thrown

[51]Ruby Bala.,(2011) The Spread of Influenza Epidemic in the Punjab (1918-1919), op. cit., 992
[52] Memorandum of influenza (1919) 1,
[53]I.D. Mills. (1986). The 1918-19 Influenza Pandemic: The Indian Experience, op.cit., 1-40.
[54]Andrew Balfour and Henry H. Scott. (1924), Health Problems of the Empire, op. cit., 218.
[55]K David Patterson and Gerald F Pyle. (1991).The Geography and Mortality of the 1918 Influenza Pandemic, op. cit.,14.
[56]RajendrakumarSen, (1923).,A Treatise on Influenza with special reference to the pandemic of 1918,North Lakhimpur, 35-38.
[57]I. D. Mills.(1986). 'The 1918-19 Influenza Pandemic:Indian Experience, op.cit.,21-22.

into riverbed or left in the jungle[58]. The provincial death rate in the Bombay presidency was a relatively high 54.9 people per thousand inhabitants[59]. India largely rural but intensely connected population. Of the 50 million pandemic associated deaths, 8 million were thought at the time to have occurred in British India. One in every 23 Indians died during 1918-19 and that one in every 3.5 global pandemic deaths was an Indian[60]. The young adults experienced a disproportionality high death risk during the 1918 pandemic, whereas older adults had a relative decreased risk.

**Table I: Influenza Mortality in British India, (1918) (up to 30 November)**

| **Province** | **Population** | **Total Estimated Influenza Deaths** | **Percentage of total population** |
|---|---|---|---|
| United Provinces | 46,820,506 | 1,072,671 | 2.2 |
| Bombay | 19,587,383 | 900,000 | 4.5 |
| Punjab | 19,337,146 | 816,317 | 4.2 |
| Central Province and Berar | 13,916,308 | 790,820 | 5.6 |
| Madras | 40,005,735 | 509,667 | 1.2 |
| Bihar and Orissa | 34,489,846 | 359,482 | 1.0 |
| Bengal | 45,329,247 | 213,098 | 0.4 |
| North West Frontier Province | 2,041,077 | 82,000 | 4.0 |
| Assam | 6,051,507 | 69,113 | 1.1 |
| Burma | 9,856,853 | 60,000 | 0.6 |
| Delhi | 416,656 | 23,175 | 5.5 |
| Coorg | 174,976 | 3,382 | 1.9 |
| **British India** | **238,026,240** | **4,899,725** | **2.0** |

**Source**: A Preliminary Report on the Influenza Pandemic of 1918 in India, 1919, p4

However, despite the fact that influenza pandemic has few historical rivals in terms of sheer loss of human life, it has not entered into the narrative of world history, nor indeed

[58]Government of India (1918) Fortnightly Report of Central Provinces, 15 November 1918: Home (Political) 1918/22, , National Archives of India, 21.

[59]Sanitary commissioner.(1920) Annual Report of the Sanitary Commissioner with the Government of India, Calcutta, Superintendent of Government Printing 1920.

[60]Olivia Reyes et.al. (2018) Epidemiology in History, Spatiotemporal Patterns and Diffusion of the 1918 Influenza Pandemic in British India, *American Journal of Epidemiology*, 187-12:2550

national histories, to the same extent that major wars or natural disasters have. From the review of above studies, three distinct category of studies have emerged regarding the historiography of the influenza pandemic. The first category primarily focuses on place of origin of the Spanish flu. The second category takes the analysis a step further and attempts to determine the mortality rate out of Spanish flu. The third category concentrates on the responses of the colonial government towards the epidemic. But none of the above studies have made scholarship on the causes of the high mortality rate in Central Provinces and Berar. Hence, the present study is an earnest attempt in this direction. Scholars suggested myriad reasons behind the high mortality in India. Olive Reyas observed that high income countries reported relatively low death rates among the elderly, but this was not observed in Indian populations and suggested it was due to the fact that the elderly population might not have been exposed to the 1830s global pandemic virus or its descendants[61]. Siddharth Chandra argued that low population density districts in British India was not suffered as much as high population density districts from the influenza pandemic of 1918–19[62]. Hence the present study analysed whether high density caused high mortality. The study used census reports for the analysis and focussed on those provinces directly administered by the British in India. The princely states excluded from this study since the princely states had their own civil service systems, were often not as well equipped to carry out the census as the British directly ruled provinces.

The Indian Empire had an area of 1,805,332 square miles, calculated in the 1921 census exceeding that of 1911 census by 2675 square miles. About 3,000 square miles were added owing to the enumeration by estimate of certain tracts in Burma which had been excluded from previous censuses. The British territory covered 1,094,300 square miles forming 61 percent of the country, while the Indian states an area of 711, 032 square miles or 39 percent.The total population was 318942480. The British territory consisted of 247003293 persons or 77 percent and the Indian states 71,939, 187 persons or 23 percent, of the whole population[63]. The size and population of British provinces and Indian states varied over a wide range. Burma was the largest province and its area was larger than France. The United Province was about the same size as Italy but had a rather larger population. Bombay resembled Spain in area and had a population equal to that of Spain and Portugal together,

[61]*Ibid.,*2554

[62]Siddharth Chandra, et.al. (2013) A Geographic Analysis of Population Density Thresholds in the Influenza Pandemic of 1918–19, *International Journal of Health Geographics*, 12: 9.

[63]Census of India (1923), Census of India 1921(Marten J.T.), Calcutta: Superintend of Government Printing, 1:1, 3

while Assam, the smallest of the major provinces had an area rather larger than that of England and Wales and population comparable with that of Switzerland. Of the larger Indian states, Hyderabad and Kashmir had each an area nearly as large as that of Great Britain without Ireland though their combined population was not much more than one-third of that of Great Britain alone[64]. On the whole of India the average population per square mile was 177, the mean density in the British provinces being 226 and in the Indian States 101.

There was a correlation between the density of the population and the quality of the rainfall. The sharp contrast between the extremes of density in the Eastern Bengal on the one hand and the sparsely inhabited areas in the plains of the Indus valley on the other was largely due to the difference between unfailing abundance and permanent deficiency of rain[65]. In Eastern Bengal, the density of population was over 1000 per square miles. This area provided favourable factors for the growth of agricultural population like alluvial soil and abundant supply of water. On the other hand, the complete absence of rain in large portions of the Indus valley and the plains of northern Rajaputana rendered these tracts uncultivable and consequently uninhabitable, except where water was supplied by artificial irrigation. The Godavari district had a population of 578 square mile and the Malabar district of the West coast a density of 585, while in the smaller state of Cochin, where physical and economic conditions were specially favourable, the density was as high as 662 per square mile. The density of population was mainly dependent on physical conditions. But the density was lowest in Central provinces and Berar primarily due to the less favourable configuration of the surface. The undulating plateaus of Central India and the central portions of the peninsula proper are broken by ranges of mountains, sometimes bare and stony and sometimes forest. Further, the Central Province was comparatively lately opened out by railway and road and colonization was more recent than in the northern districts[66].

The density of population was comparatively low in Central Provinces and Berar compared to East Bengal, South India and Ganga-Yamuna basins[67]. But the Central Provinces and Berar registered highest mortality rate in comparison with densely populated East Bengal and South India where Spanish flu least affected[68]. Likewise, the less populated

[64] *Ibid.*,5
[65] *Ibid.,*6
[66] *Ibid.,* 7
[67] *Ibid.,* 3-5
[68] *Ibid.*

North West Frontier Province registered high mortality rate[69]. From this, it proved that the density of population had no role in excess mortality rate as observed by Siddharth Chandra. If so, the densely populated East Bengal and South India would have been met the excess mortality rate. The factors behind the high mortality rate in Central Provinces and Berar are yet to be investigated.

The influenza pandemic of 1918 varied from all earlier pandemics such as caused by plague, malaria and cholera, both in terms of morality and nature. The worst recorded year of plague in India was in 1907 when twelve lakh death reported and the worst year of cholera was 1900 in which around eight lakh people died in British India[70]. The influenza of 1918 was different from plague and cholera in different ways. The influenza spread with unprecedented speed and swept across the country rapidly killing large number of people. Plague and cholera had no such lightning speed and characteristics. For instance, in the worst year of plague epidemic in India, it was reported only in a few places, while other areas were left untouched and plague reached from one area to the other in a long span of time. Again the influenza affected far more number of people than the plague, though the mortality rate in case of influenza was far less compared to plague[71].

At the time of influenza epidemic, approximately 77% of the population of the subcontinent lived in areas administered by the British, the remaining 23% living in princely states[72].The mortality effects on a per capita basis of the 1918 influenza epidemic appear to have been higher in India than anywhere else on the planet[73]. In June 1918 an unusual causes of sickness began to be observed in India. It was first noted mainly among the employees and mill workers in Bombay[74]. The first ascertained cases of influenza at Bombay city occurred on a transport arrived in May from Mesopotamia. The epidemic swept across India in a matter of three months. Influenza occurred in Karachi and July the infection appeared to be generally diffused in the Punjab and the United Provinces. Reports of the appearance of the epidemic among troops were received in July from Maymyo, Karachi, Lansdowne Jubbelpore, Abottabad, Kwandwa, Fort Lockhert, Quetta, Dehradun, Muttra and Chakrata. In spite of the dissemination of the disease during the months of July and August, no appreciable augmentation of mortality was observed, but towards the end of September

[69]*Ibid*.
[70]Ruby Bala.,(2011) The Spread of Influenza Epidemic in the Punjab (1918-1919), op.cit.,990.
[71]*Ibid.,* 991
[72]Census of India (1923), op.cit., 3
[73]Kenneth Hill. (2011). Influenza in India 1918, Excess Mortality Reassessed, op. cit., 26
[74]Public Health Reports, 1896-1970, (1919), *Influenza in India,1918,* 34: 30, 1624.

mortality began to rise alarmingly at Bombay and on 6 October attained the total of 768 deaths[75]. The epidemic reached its greatest intensity in the central, northern and western parts of the Indian empire. Compared to these regions, the provinces of Bengal, Burma, Bihar and Orissa, Madras and Assam were only slightly attacked.

The disease was mostly detected among the highly mobile categories of men: returned military man, post office employees, railway employees and general travellers'[76].The incidence of disease was generally lesser in areas far away from railway. The epidemic took a heavy toll of life in villages than urban areas because better facilities of communication with outside world and better sanitary conditions existed in towns where the general population had better clothes, houses and fed than in village[77]. The coast line escaped with a low mortality. The war situation helped to a greater extent in the reduction of death from epidemic in Punjab owing to the collection of man in cantonments where the ravages of influenza in 1918 were met by efficient medical precautions and remedies. The table below gives the estimated mortality for the provinces of British India directly or indirectly attributable to influenza up to 30 November 1918. The greatest number of deaths occurred during the months of October – November. On 30 November 1918, the epidemic was everywhere on the decline and in most parts of the country mortality had become normal.

The epidemic was very severe in all the central states of India. As regards native states the total November of deaths in Mysore state was 127651 in 1918 equivalent to a mortality of 22.37 per 1000. In Bikanir the mortality due to influenza in October and November 1918 was estimated at 61,211 deaths in a population of 683,320 equivalent to 89.5 per 1000. In the city of Udaipur 1475 persons (44.7 per 1000) died of influenza in less than six weeks. In the dominions of the Nizam of Hyderabad the number of deaths was not far from 350,000 (27 per 1000). Regarding the prevalence of influenza among the troops serving in India, it was more considerable among the British soldiers than their Indian counterparts. But the mortality among the Indian soldiers was much higher[78]. The proportion of deaths among the British troop was 8.96 and among the Indian soldiers it was 15.21[79].

[75] *Ibid*
[76] Census of India (1923), op. cit., 60
[77] Ruby Bala.,(2011) The Spread of Influenza Epidemic in the Punjab (1918-1919), op. cit., 990.
[78] Public Health Reports, 1896-1970, (1919), op.cit.,1625.
[79] *Ibid.*

India accounted in 1918-1920 for 16.7 million flu deaths out of the world total of 39.0 million that is 43 percent of the total[80]. A commonly quoted figure is that roughly one - third of the world's population was infected by the H1N1 virus during the Great Influenza Epidemic[81]. The focal point of the pandemic was India, with an estimated death toll of between 10 and 20 million. It was estimated that 4,899, 725 persons (about 2 percent of the whole population) died of influenza or its complications in British India, the vast majority within the space of two months[82]. Not less than 6 million people perished in entire India counting the number of deaths in native states. It destroyed in a few weeks more than half as many human beings as the dreaded bubonic plague killed in twenty –two years[83]. The reasons behind this enormous death rate were varied. Firstly, Indians had a low resisting power to pneumonic infection. The fatality rate for Indian troops was at least three times that found amongst British troops in India[84]. The transportation systems aided the spread of the disease. The railways played a prominent role in the spread of influenza[85]. Bombay was thought to be the entry point of the virus into India and radiated.

Shortage of food was another reason. The outbreak of the First World War in 1914 caused an immediate decline in the bulk of India's foreign trade by the contraction of shipping. The influence on prices was not felt severely during the first two years of the war, fair harvests and full stocks keeping the prices of foodstuffs from any considerable movement. But from 1917 the Indian conditions began to respond to the disturbance of war[86]. Men for the fighting and labour units and food, munitions and war material of all kinds were demanded. The strain on the railway organization dislocated the local markets and the distribution system in the country began to give trouble, while the rising prices of imported necessities such as salt, oil and cloth hit the poorer classes severely. The harvests of 1917 were good but the year was wet and unhealthy and a virulent outbreak of plague in the north and west of India caused heavy mortality[87]. Wages had not yet begun to move with the upward movement of prices and there was a general feeling of restlessness among the labouring classes, which rapidly increased under the influence of political propaganda. Then

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[80]Robert J Barro et.al ;( 2020), The Corona Virus and the great influenza epidemic. Lessons from the "Spanish Flu" for the corona virus potential effects on mortality and economic activity, op. cit. ,5
[81]*Ibid*.
[82]*The British Medical Journal,* (1919), 1-3040, 417-18.
[83]*Ibid.*
[84]*Ibid*.
[85]Sanitary commissioner.(1920) Annual Report of the Sanitary Commissioner with the Government of India
[86]Census of India (1923), op.cit.,21
[87]*Ibid*.

followed the disastrous seasons of 1918-1919. The monsoon of 1918 was exceptionally feeble and gave practically no rain after the beginning of September in the Punjab and the central and western portions of the continent, the crops failed over considerable areas and scarcity, aggravated by the high level of prices, was declared in parts of the Punjab, the United Provinces, Central Provinces and Bihar and Orissa, while agricultural conditions were equally bad in parts of the Hyderabad and Mysore states[88]. The outturn of rice fell from nearly 40,000 to 24,000 tons while the wheat harvest in the spring of 1919 was equally poor. The crop failure was as bad as, if not worse than, that of 1900 and prices of foodstuffs, cloth and other necessities of life, already high, rose to heights never previously reached. Famine relief measures were perfect this time that scarcity was not necessarily accompanied by high mortality. But meanwhile the influenza, epidemic starting in the latter part of 1918, visited almost every portion of the country and wiped out in a few months practically whole natural increase in the population for the previous seven years[89].

Emergency measures were taken by the government. Transport, the export of foodstuffs and the distribution of the necessities of life were all placed under the control of the government. These conditions lasted through the first half of 1919, but an abundant through not very well distributed monsoon in that year brought some welcome relief, though prices remained high and it was necessary to stop all export of food grains and to reinforce the stocks of the country by importing wheat from Australia.

Another reason behind the excessive death rate was the break out of plague and cholera in 1918. Plague became severe in every part of northern and central India[90]. Cholera became virulent in Eastern provinces of Assam, parts of Bihar and Orissa and Bengal. Cholera and plague either accompanied or immediately followed the influenza pandemic. The rural areas were most severely infected because lesser sanitation and ventilation compared to urban areas. The urban areas enjoyed the benefit of qualified medical aid and organized effort. Mortality was especially high among adults in the age group of 20-40 particularly among adult females, the disease being generally fatal to women in pregnancy. The high mortality among women might have been due to the fact that, in addition to the ordinary tasks of the house, on them fell the duty of nursing the others even when themselves ill.

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[88] Ibid.
[89] Ibid.
[90] *Ibid.,* p12

The excess mortality between the ages 20-40 amounted in some cases to nearly four time the mean. During the worst period, the entire village got depopulated in certain places. There was sometimes no means of disposing of the dead, crops were left unharvest and all local official action was largely paralysed, owing to the fact that the majority of the official staff were put out of action by the epidemic. To add to the distress the disease came at a period of widespread crop failure and reached its climax in November when the cold weather had set in; and, as the price of cloth soared, many were unable to provide themselves with the warm clothing essential to prevent an illness attacking the lungs[91].

**Conclusion**

The place of origin of the Spanish flu was hotly debated among the scholars. However, most of the scholars pointed it to China where most of the deadly viruses had earlier been originated in recorded history. Likewise, there is no unanimity among the scholars pertaining to the mortality rate. However, all of them have agreed that the number of causalities was higher than that of the First World War. India reported highest death rate across the globe in the so called Spanish flu spanning between 1918 and 1919. It spread to India through the Indian troops served in Europe. There is no unanimity among the scholars regarding the number of deaths in India. Different scholars provided varied number of causalities but all of them agreed that India reported highest death rate across the globe. Among the British Provinces, the Central Provinces and Berar registered heavy toll of life. Previous studies showed that high death rate in India was due to high density of population. If so, largest number of death rate would have been occurred in densely populated East Bengal. But East Bengal registered only low death rate. Comparatively sparsely populated Central Provinces and Berar and North West Frontier Province met high mortality rate. It was found that density population had played no role in increasing death rate in the Spanish flu.There were multiplicity of reasons behind the high mortality rate among the Indians in the Spanish flu broke out in 1918. Non-exposure to the influenza virus of 1830s or its variant led to poor resisting power among the Indians. Shortage of food due to the bad monsoon of 1918 and the soaring prices of essential commodities pursuant to the First World War denied immunity boosting vitamins especially to the rural population resulting excess mortality in villages. Again, the people in villages did not have proper housing nor clothing nor necessary medical knowledge of usage of mask, sanitizer and social distancing so as to prevent the spread of

[91] *Ibid.,* p13

virus. Further, the Spanish flu was accompanied by cholera and bubonic plague in Central and Northern India. It caused a heavy toll of life.