

## A History of the 1918 Spanish Influenza Pandemic and its Impact on Iran

Mohammad Hossein Azizi MD<sup>1</sup>, Ghanbar Ali Raees Jalali MD<sup>2</sup>, Farzaneh Azizi<sup>3</sup>

### Abstract:

Approximately ninety two years ago, the worst influenza pandemic or “Spanish flu” occurred in 1918, at the end of the First World War (WWI, 1914 – 1918) which resulted in the deaths of millions of people worldwide. The death toll exceeded the total number of victims of WWI.

The 1918 Spanish flu was a deadly, major global event that affected many countries, including Iran. In Iran, it was accompanied by a high mortality rate estimated to be more than one million. However, detailed information on the impact of this outbreak in Iran is scarce.

The present paper describes a brief history of the influenza pandemics in the world as well as the spread of the 1918 Spanish flu to Iran.

**Keywords:** Epidemic - Influenza - Iran - Spanish flu pandemic

### Introduction

The term influenza has an Italian origin meaning ‘influence’ which is derived from the Latin word “influential” meaning ‘in flow’ or ‘flow into’.<sup>1</sup> The word influenza “arose during the 15<sup>th</sup> century where an epidemic of the disease was ascribed to the influence [influenza] of the stars”.<sup>2</sup> In the past medical writings of Iran, the word “bad-e nazleh” was used to describe influenza. The Dutch physician, Dr. Johan Louis Shlimmer (1819 – 1881) who was the teacher of modern medicine at the Dar al-Fonun School, in his French-Persian medical dictionary published in 1874, wrote: “Nazleh-e wabai-e ghacebetorrieh” as the Persian equivalent of influenza.<sup>3</sup> Influenza or gripe (flu/grip) is an acute contagious viral respiratory disease of short duration that presents with fever, chills, perspiration, muscular pain, and cough.<sup>4</sup>

Influenza virus may affect humans, birds, and pigs. Three subtypes of influenza virus, namely A, B, and C have been identified by Smith (type A, 1933), Francis (type B, 1936), and Taylor (type C,

1950). Type A influenza virus was responsible for the 1918 Spanish flu. The influenza virus belongs to the Orthomyxovirus family and has a diameter of 80 to 120 nm.<sup>5</sup> This tiny microorganism has a high potential for mutation and has caused many deadly outbreaks throughout history.

Thus far, several pandemics with high mortality rates have occurred. The latest swine influenza pandemic (H1N1) began in early April 2009 in the USA and Mexico, spread rapidly across other regions of the world and still continues.<sup>6</sup>

### Major influenza pandemics in the world

Based on historical records, in each century, one to three influenza pandemics have occurred,<sup>7</sup> but the history of influenza pandemics in the past 300 years is more informative. In the 18<sup>th</sup> century, two influenza pandemics took place in 1729 and 1781 – 1782. In the 19<sup>th</sup> century, a pandemic occurred from 1830 – 1833 and another between 1898 and 1900. In the 20<sup>th</sup> century, two influenza pandemics happened in 1918 – 1919 and 1957 – 1968.<sup>8</sup> The 1918 influenza pandemic was known as the Spanish flu and the 1957 pandemic was named the Asian flu. In 1968, another pandemic took place which was known as the Hong Kong flu.<sup>9</sup>

According to a World Health Organization report, during the 1918 Spanish flu pandemic, approximately 50% of the world’s population was affected by the

**Authors’ affiliations:** <sup>1</sup>Academy of Medical Sciences of the I.R. of Iran, Tehran, <sup>2</sup>Department of Internal Medicine, Nemazee Hospital, Shiraz, <sup>3</sup>Azad University, School of Veterinary Medicine, Tehran, Iran.

**Corresponding author and reprints:** Mohammad-Hossein Azizi MD, Academy of Medical Sciences of the I.R. of Iran, Tehran, Iran. Tel: +98-212-293-9869, E-mail: azizi@ams.ac.ir

Accepted for publication: 3 March 2010

influenza virus and it was estimated that its mortality rate was between 40 and 50 million, or 2 to 2.5% of the world's population. The victims were mainly healthy young people. The 1918 Spanish pandemic had three waves. The first wave started in the spring followed by the second wave in the autumn which had a high virulence due to viral mutation.<sup>10</sup> This second wave spread worldwide from September to November 1918 and, in many countries, a third wave also took place in early 1919. Among the three waves of Spanish flu in the UK, the highest mortality occurred during the second wave.<sup>11</sup>

The influenza outbreak began May 22, 1918 in Spain and between 1918 and early 1919, a total of 260,000 people died in that country.<sup>12</sup>

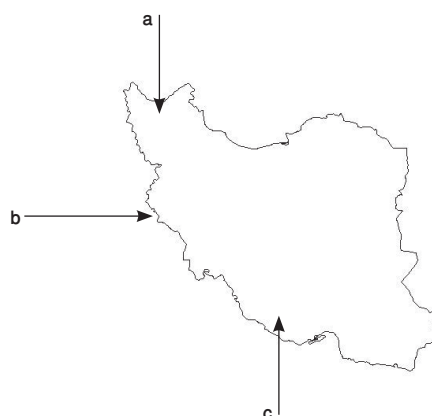
In the USA, the total number who died was 549,000.<sup>5</sup> During the Spanish pandemic, the infant mortality rate was higher and their deaths were mainly attributed to bronchitis. In other age groups, however, including the elderly, bronchopneumonia was the most common cause of death.<sup>13</sup> Type A strain of the 1918 pandemic of influenza (H1N1) had a similar feature with other pandemic influenza strains in its rapid spread.<sup>14</sup>

### The Spanish flu outbreak in Iran

The 1918 Spanish flu epidemic in Iran occurred during Ahmad Shah Qajar's reign (1909 – 1925). The World War I began in 1914 of which Iran declared neutrality. During the last year of the war, the influenza pandemic began and spread to Iran. At that time, the Russian troops were in Azarbaijan Province and Ghazvin. The English and Indian soldiers were in Bushehr and Bandar-e Lengeh Ports.<sup>15</sup> The Indian soldiers had an influential role in the spread of influenza to the Persian Gulf region and indeed the outbreak reached Bushehr from India. In addition, the public health status in Iran was poor due to a great famine as well as a cholera outbreak and lack of proper medical facilities. Mohammad Ali Jamalzadeh, the contemporary writer (1892 – 1997) described this gloomy situation in Shiraz. He wrote: "at the end of WWI, three lethal killers entered Shiraz; they were famine, cholera and the Spanish flu. Many people died and corpses were seen everywhere in the city. The Bazar and shops were closed. There was no doctor, no nurse, and no drug."<sup>16</sup>

According to the report of the Health Department of League of Nations in 1924 (six years after the

Spanish flu epidemic); at that time, Iran had a population of around 10 million. Tehran's population was 220,000. During the Spanish flu epidemic in 1918, thousands of people died from influenza in Iran. The influenza epidemic entered Iran via the western border from Baghdad to Kermanshah and finally reached Tehran. In August 1918, the influenza epidemic spread to Hamadan and Ghazvin. At the end of August, Birjand in Khorasan Province and Bander-e Anzali in northern Iran were affected. On the first of September, the flu outbreak reached Sistan Province and on the second week of September, the outbreak reached Tabriz from Ghafghaz (Figure 1). Influenza spread to the entire country with the rural areas more affected than urban regions. Ashair tribes, particularly the healthy men died from influenza. The reported mortality rate in the nomadic Ghashghai tribe was as high as 30%. According to Percy Sykes (1916 – 1945), at that time, the city of Shiraz had a population of 50,000 of which 5,000 died from the Spanish flu. The mortality rate in Kermanshah was reported as 1%, but in the villages as many as 20% of the people were reported to have died, a figure which seems exaggerated. In Tehran, during a three month period, 1% of the population died as a result of the Spanish flu. Dr. Dawdson reported the influenza epidemic in Kerman in 1918 which coincided with the famine and the cholera outbreak, but he did not mention the mortality rate.<sup>17,18</sup>

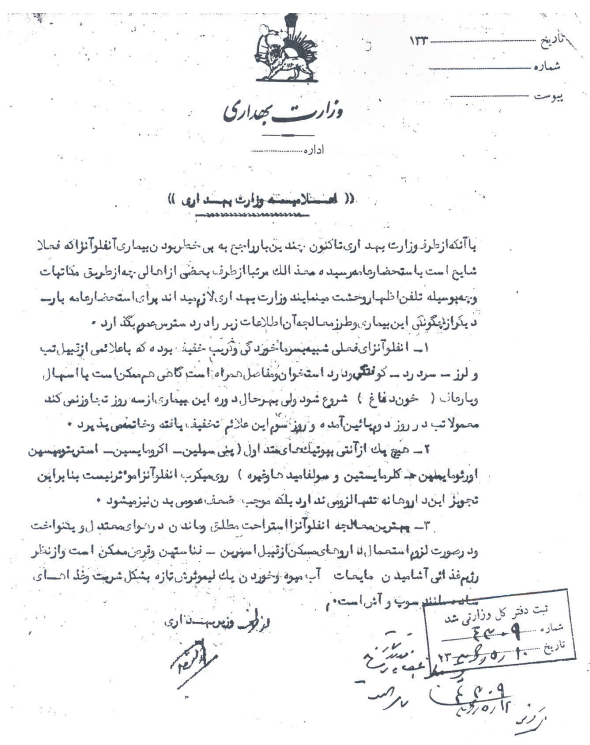


**Figure 1:** The main entry routes of the 1918 Spanish flu to Iran  
a. From Baku to Julfa and Tabriz in the northwest.  
b. From Baghdad to Kermanshah in the west.  
c. From India to Bushehr and then Shiraz in the south.

Worldwide, the mortality curve of the 1918 Spanish flu pandemic based on the victims' ages showed a "W" pattern rather than the customary "U" shaped

pattern as seen with other epidemics, because most victims were men and women aged 15 to 44 years.<sup>19</sup> But, based on the study of Afhkami, contrary to the victims of the Spanish flu pandemic in the remainder of the world who were mostly young healthy individuals; in Iran, factors such as famine, opium consumption, anemia, and malaria changed the age pattern of the victims and were responsible for a high mortality from the 1918 influenza outbreak.<sup>20</sup> As Afhkami pointed out, the total estimated death from the 1918 Spanish influenza in Iran was between 902,400 and 2,431,000, but the real figure was probably between the two mentioned extremes.<sup>21</sup>

Around 32 years after the 1918 Spanish flu, another influenza epidemic occurred in Iran in 1957, however, was not as severe. Figure 2 shows the declaration of the Ministry of Health on this influenza outbreak with a number of recommendations to patients, including more fluid intake, bed rest and no antibiotic usage.



**Figure 2:** The declaration of the Ministry of Health on the influenza outbreak in 1957 focused mainly on bed rest, high fluid intake, and short duration of the disease.

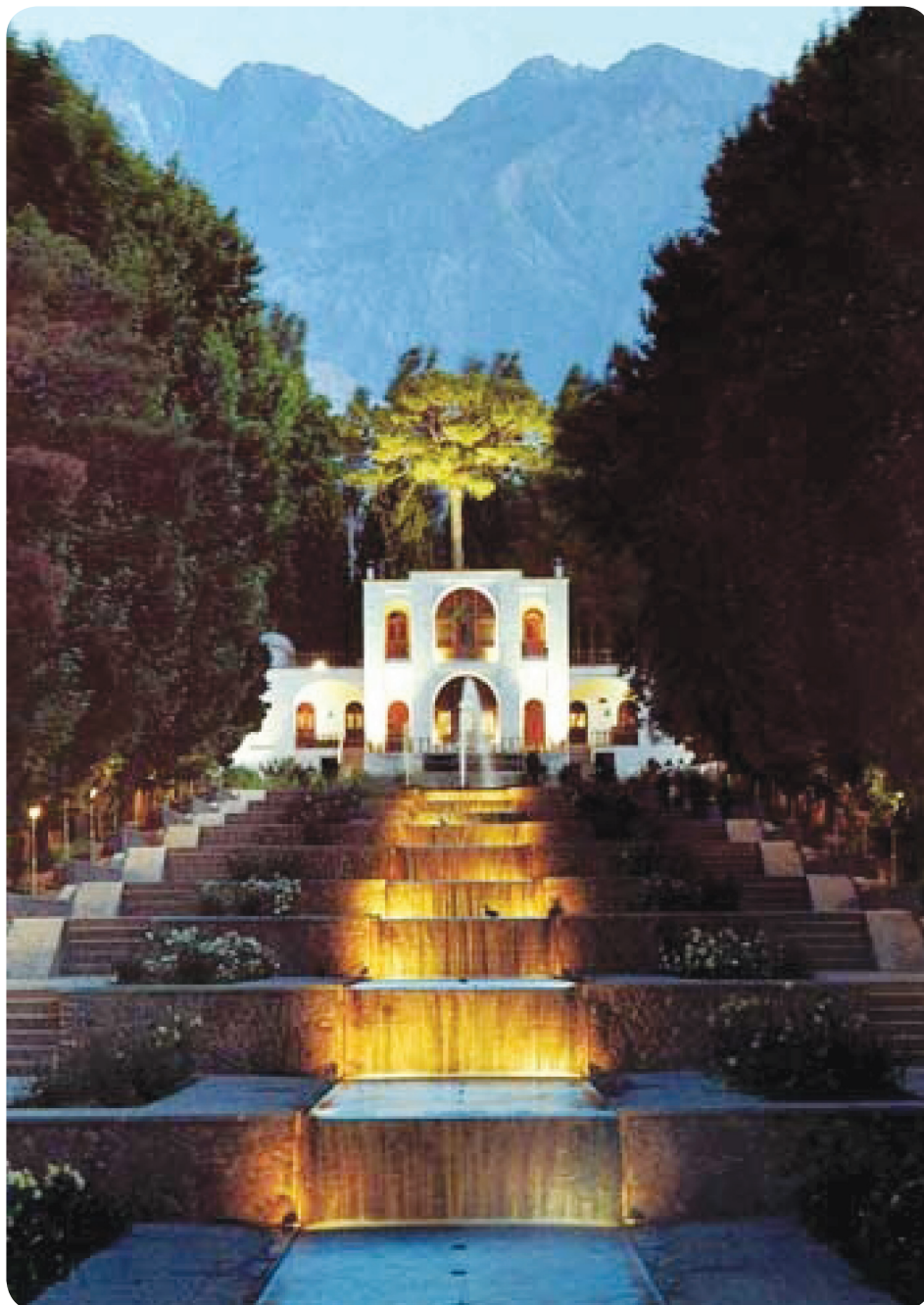
(Source: National Library and Archives of the I.R. of Iran. Courtesy of Farid Ghasemlou and Ali Akbar Vatanparast, Iranian Academy of Medical Sciences.)

## References

- Chantrell G. *Oxford Dictionary of Word Histories*. Oxford, New York: Oxford University Press; 2004: 272.
- Mogabgab WJ. Influenza. In: *Encyclopedia Americana*. Vol.15. Danbury, Connecticut: Scholastic Library Publishing, Inc.; 2006: 159.
- Schlimmer JL. *Terminologie Medico-Pharmaceutique et Anthropologique française-Persane*. Tehran, 1874, lithograph; reset, with a preface by I. Afshar, Tehran: Tehran University Press 1970: 306.
- Stedman's Medical Dictionary. 25<sup>th</sup> ed. Baltimore: Williams and Wilkins; 1990: 782.
- Treanor JJ. Influenza virus. In: Mandell GL, Douglas RG, Bennett JE, Dolin R, eds. *Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases*. 6<sup>th</sup> ed. USA: Elsevier, Churchill Livingstone; 2005: Vol. 2: 2060.
- Cao B, Li XW, Mao Y, Wang J, Lu HZ, Chen YS, et al. Clinical features of the initial cases of 2009 pandemic influenza A (H1N1) virus infection in China. *N Engl J Med*. 2009; **361**: 2507 – 2517.
- Gottfredsson M. The Spanish flu in Iceland 1918. Lessons in medicine and history [in Icelandic]. *Laeknabladid*. 2008; **11**: 737 – 745.
- Potter CW. A history of influenza. *J Appl Microbiol*. 2001; **91**: 572 – 579.
- History of influenza, Pandemic*. Available from: URL: [www.euro.who.int/influenza](http://www.euro.who.int/influenza). [Accessed December 31, 2009].
- Erkoreka A. Spanish influenza in the heart of Europe. A study of significant sample of Basque population. *Gesnerus*. 2008; **65**: 30 – 41.
- Taubenberger JK, Morens DM. 1918 Influenza: the mother of all pandemics. *Rev Biomed*. 2006; **17**: 69 – 79.
- Trilla A, Trilla G, Daere C. The 1918 "Spanish flu" in Spain. *Clin Infect Dis*. 2008; **47**: 668 – 673.
- Shimao T. Spanish flu related data [In Japanese]. *Kekkaku*. 2009; **84**: 685 – 689.
- Mills C, Robins JM, Lipitch M. Transmissibility of 1918 pandemic influenza. *Nature*. 2004; **432**: 904 – 906.
- Niazmand R. *Reza Shah az Tavallood ta Saltant* [in Persian]. Vol.2, 5<sup>th</sup> ed. Tehran: Hekayat-e Ghalam-e Novin Publication; 2007: 182 – 185.
- Majd MG. Ghahti Bozorg va Marg-o-mir Dar Iran, 1917 – 1919 [Translated into Persian by M. Jamshidi]. *Faslnameh Takhasosi Tarikh Moasere Iran*. 2006; **10** (40).
- Pirnia D, Khansari P. *Gozarash-e Edareh-y Sehhyeh Jamea-y Melal, Sep-June 1924* [in Persian]. Tehran: The Public Health Department of League of Na-



- tions; 1976: 64 – 65.
18. Floor W. *Public Health in Qajar Iran*. Washington DC: Mage Publishers; 2004: 26, 230.
  19. Brainerd E, Siegler MV. *The Economic Effects of the 1918 Influenza Epidemic*. CEPR Discussion Paper No. 3791. Feb. 2003. Available form: URL: <http://papers.ssrn.com>. [Accessed 4/1/2010].
  20. Afkhami AA. Compromised constitutions: the Iranian experience with the 1918 influenza pandemic. *Bull Hist Med*. 2003; **77**: 367 – 392.
  21. Afkhami AA. Influenza. In: Yarshater E, ed. *Encyclopedia Iranica*. Available from: URL: <http://www.iranica.com/articles/influenza> [Accessed 17/4/2010]



Bagh-e Shahzadeh, 19th century –Kerman, Iran