



Spanish Flu 1918-1919 – Aspects of Demographic Implications

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Abstract

The usual perception of the influenza pandemic that ravaged the world throughout 1918–19 (and in a much less manner in 1920) is structured into analyzing three different waves that touched almost the whole of humanity in quick succession from the spring of 1918 onwards. Results from pandemics regarding the statistical records of influenza morbidity and mortality are the focus of medical science for a long time. Although the evolution of estimations across recent decades almost always tended towards higher and higher estimates, has led to visions of over 100 million deaths throughout definitely the most deadly influenza epidemic, it is clear that such numbers should be taken with a huge dose of skepticism. The approach of this paper is centred on the methods used in determining demographic estimations, and especially evaluations, of historical developments in the situation where the influenza pandemic overlapped with World War I.

Key words: Spanish flu, pandemics, World War I, demographics, influenza.

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Introduction

In history, as a science in general, and in the history of medicine especially, the study of the historical medical aggregation or cluster known as Spanish Flu 1918-1919 has become the ultimate place for particularly inventive excursions and inspirational theories often during the last decades. The challenges that have emerged on the medical horizon in recent times have been an impacting inspiration on medical history to explain the mechanisms of the occurrence, spread, and consequences of that major pandemic now more than a century old. However, the situation in which Spanish Flu 1918-1919 is discussed in the midst of the current COVID-19 pandemic - the first pandemic in over 100 years that by its demographic implications can be compared to the events developed at the end of the World War I - certainly represents a completely new dimension of challenge. All aspects of comparative analysis are self-evident, and the possibilities for observ-

ing the mechanisms related to the pandemic phenomena of 1918-1919 are now incomparably more illustrative. Of course, the reverse is also true, within the current pandemic humanity is turning more than ever to the experiences gained during Spanish Flu, in order to find solutions from the then implemented measures for an adequate response to all unknowns that a new wave of pandemics instantly presents.

In this sense, it is especially interesting and illustrative to follow the mechanisms of the spread of Spanish Flu, its mortality and all the demographic consequences, because in this segment the lessons that can be learned are very useful. It is clear that such comparative analysis should be more precise only after the COVID-19 pandemic is over. That is the time when clear comparisons of the pandemic's reach can be made at the planetary level, especially in the context of demographic

loss calculations. However, the current moment provides a much better insight into the reality of 1918 and 1919, especially in terms of comparing the existence of knowledge about the dangers that people encountered, or the misconceptions that resulted in the loss of precious time and, with it, many lives as well.

Ignorance and silence

In understanding the consequences caused by the events of 1918, one of the key dimensions is in having adequate knowledge of how the public and medicines of that time reacted to the appearance of a deadly epidemic, i.e. what did the doctors and researchers know about the disease that suddenly emerged: what and how could previous experiences help them. In this context, the very fact that in 1918, during the first encounter with the patients, some doctors still wondered if they were actually facing the outbreak of a new plague epidemic¹ speaks quite illustratively of the widespread ignorance regarding the elementary aspects of danger that loomed over humanity. Basically, medicine and medical practice in 1918 still did not have a clear idea of how to deal with bacteriological infections, and of course it did not have the slightest idea about viral epidemics. The crucial knowledge that existed in confronting the flu epidemic of 1918 came from the results of previous epidemics. The most recent and illustrative experience being the epidemic of 1889–1890, known as the “Asiatic flu” or “Russian flu”, because it too resulted in many casualties (nearly a million worldwide).²

It was in the context of the analysis of this last great pandemic of the 19th century that the German doctor and bacteriologist Richard Pfeiffer (1858-1945) discovered the bacterium *Haemophilus influenzae* and developed the theory that this germ was the main cause of influenza.³ His theory prevailed until the end of World War I and remained current during the great epidemic of 1918-1919. Only in the following years and decades did scientists come to realise that this theory was completely wrong. A major step in the discovery of the Influenza A virus in 1934 was in the development of the electron microscope in Germany, in 1931.⁴

However, the operational use of the electron microscope, its availability outside of Germany, as well as the circulation of knowledge, understanding and ideas about the Influenza virus took several years to emerge into theories and medical practice. The onset of World War II additionally slowed the process. It was not until the early 1950's that a complete system of knowledge about diagnostics and treatment of influenza became established as part of the science of medicines. The reality of the extent to which medicine and medical practice had little realization and no clear idea about the Influenza A virus subtype H1N1 in 1918 is very often completely suppressed in the context of later analysis of events during the Spanish flu period.



Figure 1: Newspaper Ads, October 1918.
<https://www.pinterest.ca/pin/444800900701088612/>

The very high levels of morbidity and mortality of Spanish flu, already at initial stage, prompted some doctors to make comparisons with outbreaks of plagues from previous centuries. Those experiences gained during earlier confrontations with plague pandemics, especially in the context of isolation, by building sanitary cordons at borders and through quarantine stations,⁵ were of uppermost importance in battling against the spread of the disease. Unfortunately, some of those measures, although successfully

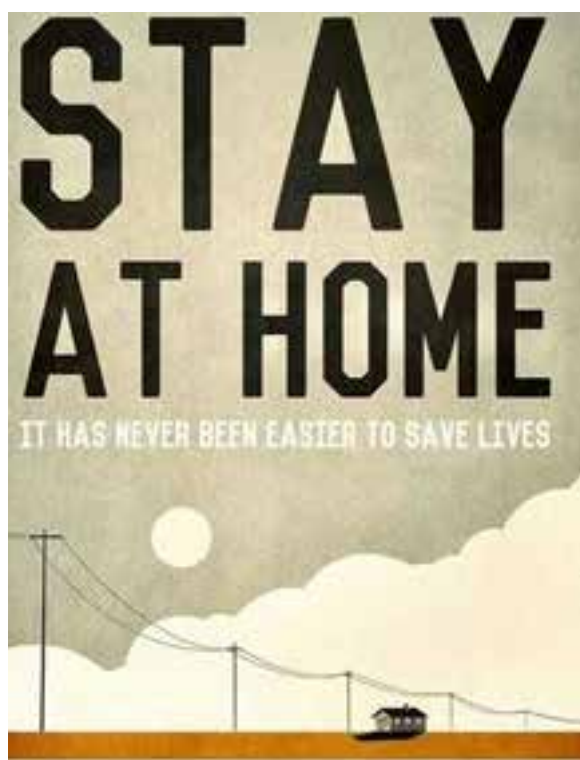


Figure 2: Influenza Poster

<https://www.pinterest.ca/pin/508343876694359021/>



Figure 3: Seattle police wearing masks in December 1918

[https://en.wikipedia.org/wiki/Spanish_flu#/media/File:Spanish_flu_in_1918,_Police_officers_in_masks,_Seattle_Police_Department_detail,_from-_165-WW-269B-25-police-l_\(cropped\).jpg](https://en.wikipedia.org/wiki/Spanish_flu#/media/File:Spanish_flu_in_1918,_Police_officers_in_masks,_Seattle_Police_Department_detail,_from-_165-WW-269B-25-police-l_(cropped).jpg)

implemented throughout the 18th century, were largely forgotten in 1918. The only means of protection during the crisis were face masks, but with limited use only in the United States (US) and some countries in Western Europe. Masks in use throughout 1918-1919 were exclusively double layered gauze masks, made of cotton.⁶ In most countries and situations everywhere they were found to be of poor quality and often used in an inappropriate way, and in general were ineffective. It was not before the 1960's that surgical



Figure 4: Family wearing masks during the Spanish flu pandemic.

<https://www.pinterest.ca/pin/5911043253428165/>



Figure 5: „Flu fashion“

<https://www.pinterest.ca/pin/798263102686610385/>

masks were manufactured and became available, and even then, only in western countries (Figures 1-6).⁷

All aspects about the lack of knowledge in situations of confronting the new and very lethal strain of influenza virus are the foundation for the same



Figure 6: Street car conductor in Seattle not allowing passengers aboard without a mask. (1918)
<https://designyourtrust.com/2009/04/influenza-pandemic-worlds-history-1918/#BML8dKyxgyjSomD9>.

lack of adequate knowledge about the dynamics of the spread of the disease and its consequences, particularly in regard to the level of mortality. That was especially important in the first years and decade that followed the First World War and the Spanish flu. Throughout the 1920's and 1930's it was almost impossible to find studies on the biggest pandemics of the last several centuries. The effects of the Second World War added more into the story of suppressed memories and delay in adequate scientific reaction. In fact, it was not before the 1970's that Spanish flu began to gain ground within the history of medical science. Even then, results were poor in regard to quality and quantity.

Rising attention

The historiography of the Spanish flu only commenced in 1998, when the first international conference on the history of the pandemic under the title 'Reflections on the Spanish Flu Pandemic after 80 Years: Causes, Course & Consequence' was

held in South Africa. Even at that event the subject attracted little attention beyond the group of 36 scholars who gathered in Cape Town to discuss it. However, the participants and the volume of conference papers which resulted from the meeting,⁸ produced a survey of the historiography of the pandemic up to that time. The event contributed in identifying distinct ways in which Spanish flu had been conceived over previous decades, such as for example a significant episode of epidemiological history, or as a crisis in social and public health. A major inspiration for the conference came from the then newest scientific discoveries made by Jeffery Taubenberger within the field of viral archaeology, which was completely new.⁹

The efforts of Jeffery Taubenberger and his team were with the aim of a full restoration of the virus that caused the Spanish flu pandemics by the recovery of tissues from flu victims. This technique was made possible during the 1990's. Initial tests throughout 1996 and 1997 on specimens that originated from the corpses of American soldiers who died in army camps in South Carolina and Upton, New York, respectively, around the time that the second wave of pandemics peaked in September 1918, provided possibilities for the first encouraging results.¹⁰ Further fieldwork, in the following years mainly on tissues dug up in permafrost in Alaska, where corpses could have been well preserved all the way back to 1918, gave a clear pattern towards amassing enough viral ribonucleic acid (RNA) segments to implement a complete sequencing of the influenza virus from 1918.¹¹ Another several years of genetic work in laboratories resulted in the publication of the complete genome sequence in 2005.¹² Without any doubt this was one of the crucial breakthroughs in the history of medicine during the last few decades.

At the same time as the breakthrough in the new field of viral archeology, the original group of scientists, who met at the international conference in Cape Town, gathered again. They provided further assurance regarding theories about the importance of pandemics, now with new and very significant levels of scientific attractivity. So, results made in the field of viral archeology suddenly led to shaking the foundations built around historical knowledge regarding some key events from human history, such as the outcome of First World War. Questions on the importance of Spanish flu pandemics, in the entire scope of the first

global encounter in human history with them, came to the surface pretty fast.

The usual human inclination to greatness, meaning towards great numbers, brought about a series of new articles where estimations about numbers of victims connected with the pandemics of Spanish flu tended to increase constantly.¹³ Earlier assumptions that the number of deaths should have been around 20 million, were quickly substituted with much bigger estimations, where total mortality was presented as somewhere between 50 and 100 million, or perhaps even more.¹⁴ Estimations like that followed the trend of a gradual rise of global interest in the scope of pandemics, especially the possibilities for the emergence of new pandemics, capable to emulate or even surpass the dreadful numbers that Spanish flu posted early in 20th century.

The rise in this interest was actually quite complex. The reasons for such phenomenon at the end of the 20th and beginning of the 21st century have been very diverse. It is an undeniable fact that history as a science was in huge turmoil, especially with the rise in importance of social and economic history against the old dominance of political history. In addition, environmental history became more and more attractive and, in general, an inter-disciplinary approach in science gained momentum like never before. With the crushing of rigid disciplinary foundations and walls, other scientific disciplines were provided with possibilities of utilizing this experience and methodological approach in studying historical phenomena.

Next to that, real public pressure was apparent over a new pandemic threat, which was embodied in the increasing danger of AIDS throughout the 1980's and 1990's. Also fears of possible new epidemics of flu influenza were fueled by the emergence of the H5N1 strain influenza in Hong Kong, at the end of 1997. The same strain occurred several more times in the following years, especially in Asia. The problem of perspective related to new influenza pandemics was especially underlined in 2009, with the outbreak of swine flu in Mexico. Fears about it have grown since mainly because of the fact that the causative virus was found to be of the H1N1 family strain, the same one responsible for millions of deaths during Spanish flu.⁹

The new dimension in confronting viruses and fears of respiratory disease pandemics, was also faced in 2002-2003 by the outbreak of Severe Acute Respiratory Syndrome (SARS), caused by a new type of corona virus (severe acute respiratory syndrome-related coronavirus, SARS-CoV-1). The speed in which that disease spread from Asia to North America, causing the outcome of about 800 deaths and with a mortality of almost 10 per cent, appeared to be the realisation of all the fears amassed from previous years.¹⁵ Luckily, after that pandemic was definitely contained in 2004, SARS-CoV-1 never emerged again.

All these examples of dealing with epidemics have additionally influenced the public in becoming interested in the history of previous epidemics, and thus in the Spanish flu as well. In parallel with that came the fear that developed from potential bioterrorism, especially in the USA, following the terrorist attack of 11 September 2001, as well as subsequent anthrax attacks,⁹ where the use of bacteria (in this case *Bacillus anthracis*) as bioweapon was clearly demonstrated. An earlier event in Japan, where doomsday sect Aum Shinrikyo released one form of toxic compound sarin in the Tokyo Metro, in March 1995,¹⁶ especially illustrated the possibilities for a massive dispersion of lethal poisonous agents.¹⁷

In general, attention towards the heritage of Spanish flu mostly increased in the US. Some scientist and authors definitely used the special kind of American attention for their own promotion. In 2004 John Barry, American author and historian published a book about Spanish flu, entitled: 'The Great Influenza: The Epic Story of the Deadliest Plague in History'. In the preface he clearly stated how the recent outbreak of influenza in Asia inspired him to explore history of Spanish flu in order to present 'how American society reacted to an immense challenge, a war of nature launched against man...'. Adding that: '[M]y own interests have always focused on people who try to exercise some kind of control over events', he emphasised how the focus in the book was clearly only upon the best American doctors and scientists from the period of Spanish flu, who had battled disease with lot of heroism.¹⁸ It was no wonder, after all, that his book was a New York Times best seller.

Estimations and overestimations

With the passing years the number of books and articles about Spanish flu has seen a further rise. Authors almost constantly tended to point out how whole story regarding the influenza pandemics from 1918-1919 was pretty much swept under the carpet from the side of 'classic history' because of the significance of the First World War.¹⁹ Some of them made specific social research in trying to answer how it was possible that immediately after Spanish flu its heritage was so strongly surrounded by silence. The American author Nancy Bristow made the first steps in the territory of gender in confronting the history of medical treatment in the US, during 1918 and 1919. She concluded how female nurses and their whole profession 'came through the epidemic with their heads held'. This was because they had been able to fulfil all aspects of their professional purpose and to show how important their role was in the medical systems and in society in general. Their work was 'a meaningful opportunity for service that only enhanced their confidence as women and as nurses'. On the other hand, most doctors of that time had been males. It was their inability to successfully combat and overcome the disease. She, therefore, concluded how 'For many doctors the epidemic would always remain the low point in their professional lives'.²⁰ That led to the assumption of how such a feeling became the basis for silence about the lethal episode arising from the Spanish flu.

Nevertheless, authors mainly suggested how the primal aspects of negligence in dealing with the history of Spanish flu contributed to a constant under estimation in the number of victims. The usual perception that there were three waves in the history of the influenza pandemic of 1918-19 is already firmly entrenched in historical knowledge, where it is clear how the first wave started in late spring and early summer of 1918, in the northern hemisphere, that the second wave, at its height between September and November 1918, was by far most lethal, and that the third wave, from early spring of 1919, was much less significant. Those who claim significant underestimates in the recorded statistics of influenza morbidity and mortality mainly like to point out the limitations of those data, connected with missing records or misdiagnosis. Initial estimations from the 1920's produced a calculation of somewhere

about 21.5 million deaths around the world. One article from 1991 revised those numbers, claiming that the number of victims was in the range of 24.7-39.3 million.¹³

Probably most famous example of any modern estimation is an article with the title 'Updating the Accounts: Global Mortality of the 1918-1920 "Spanish" Influenza Pandemic', published (in 2002) by Niall P. A. S. Johnson and Juergen Mueller.¹⁴ This paper proposed how the number of outcomes in deaths during the Spanish flu pandemics was of the order of 50 million. Some authors even claimed that the number can be much higher. As one of them stated: 'However, it must be acknowledged that even this vast figure may be substantially lower than the real toll, perhaps by as much as 100 per cent underestimated'. As the basis for such estimations those authors refer to very possible mistakes made in under reporting cases. They especially point to colonial areas in the world, which could 'also occur because of the deadlines placed on reporting by (colonial) authorities and reporting agencies, as well as inconsistent coverage or reporting of the population (often overlooking rural and/or native populations)'.¹⁴

Authors also introduced aspects of censorship into the calculations, claiming how 'these factors are all in addition to the widespread problem of the restriction of reporting on the major wave of the pandemic, ignoring influenza mortality before and after this wave'.¹⁴ The situation in regard to censorship was one of the key factors in the early perceptions about Spanish flu. First of all, the name 'Spanish flu' resulted from the fact that Spain was the first country in Europe and the world where reports about the outbreak of the disease openly circulated in newspapers and in public opinion. This was enabled by the neutrality of Spain during the First World War. Almost all other countries in Europe, deeply entrenched in the fierce war battles of 1918 that were decisive, were made to resort to concealing information about the outbreak, because of the possibility that the enemy could exploit any sign of weakness shown in operations of the war.¹⁹

Mortality rates in the US were probably the most correctly calculated of all the countries in the world immediately after the pandemic. They were, nevertheless, based on estimations, where the usual system included a perception of 'ex-

cess deaths' in the calculations. This is where the measurement of deaths during a certain shorter period for a certain area is produced in comparison to the average level of deaths during a longer period in that same area. Based upon this form of estimation the total number of deaths connected with the Spanish flu among American citizens was 675,000 (the US population at that time was around 103 million). Mortality rates in many European countries from the 1918–1919 influenza pandemic are also based on estimations. So, estimations that circulated during the 1920's gave approximate rates for the biggest European countries: Great Britain 230,000 deaths (population 39 million), France 240,000 (population 33 million), Russia/USSR 450,000 (population 184 million), Germany 240,000 (population 58 million), Italy 390,000 (population 36 million) and Spain 260,000 (population 21 million). From those estimations the total number of outcomes in deaths for all European countries, was about 2.3 million.¹⁴

It is, of course, of utmost importance to recognise the demographic relations of the world in 1918, especially when some comparisons with the actual COVID-19 pandemic for the year 2020 are eventually made.²¹ World population in 1918 is estimated to be around 1.8 billion. That number is about 4.3 times or 6 billion smaller than the world's population today, just over a century later (of about 7.8 billion). This also means the population density level on the planet was 4.3 times smaller than now. However, just as it is today, in 1918 the world population was mainly concentrated in Asia. About 60 per cent of all inhabitants lived on the biggest continent (that proportion remains approximately the same), with the most important concentrations in China and India.²²

Unfortunately, so far, the historiography about influenza pandemic has always been closely connected to national boundaries, while pandemic being a phenomenon, logically have a transnational global character. It is very noticeable that the estimations made in the majority of the articles stated here tend to be largely US-centred and, in a much less manner, also West European-centred. In this context the big differences in estimating outcomes in deaths throughout epidemics are mainly connected with the fluctuations in estimating the number of deaths in Asia. Based upon estimates for the number of deaths in the developed world, the authors always tend to dis-

play much bigger numbers for countries in Africa and especially Asia. While the historical basis for such estimations is very unstable, records of data for those areas from the period of 1918–1919 are also quite scarce. For example, in their article Niall P. A. S. Johnson and Juergen Mueller came to conclude that estimates for the then area of India (at that time under British colonial rule, which encompassed the contemporary area of Pakistan and Bangladesh) was in the order of 18.5 million deaths.¹⁴ This result was obviously heavily implied by the fact that India, in the then territorial frame, originally had a population of about 306 million.

For several years one of the most important indicators for population movement within historic demographic relations is the Human Mortality Database (HMD), a specific tool published online,²³ produced through cooperation between the University of California, Berkeley (US) and the Max Planck Institute for Demographic Research (Germany), assisted by the Centre on the Economics and Development of Aging (CEDA) at French Institute for Demographic Studies (INED). The HMD contains data on population and death for several countries, by age and by year. Numbers for cases of deaths are extracted from national registries, while population counts are the product of periodic censuses and official population estimates.

In their recent article 'Reassessing the Global Mortality Burden of the 1918 Influenza Pandemic',²⁴ authors Peter Spreeuwenberg, Madelon Kroneman and John Paget, from NIVEL (Netherlands Institute for Health Services Research), in Utrecht, also included the 'Statistical Abstract for British India 1915–16 to 1924–25', published in London in 1926. The analysis of data from this period reveals that the demographic losses in the area of South and Southeast Asia in the early decades of the 20th century was from the much greater impact of malaria epidemics, than the impact and consequences of Spanish flu. The final estimations by those authors for India are of about 6 million outcomes in deaths correlated with the Spanish flu in 1918 and 1919.

Also, just to note the global estimations. Those have been presented in three scenarios, with the focus on the middle version of the estimations: about 15 million deaths in 1918 and about 2.5 million deaths in 1919.²⁴ The ultimate computa-

tion, therefore, is the number of 17.5 million victims from the biggest and deadliest pandemic in recent history. To reiterate again, that those results are based upon estimations and which, mainly, are indirect estimations. Although this is so, they seem to me to be much more in accordance with demographic reality at that time than suggestions of about 100 million or even more deaths.

In his article 'Die „Spanische Grippe“ 1918/19. Verlauf, Folgen und Deutungen in Deutschland im Kontext des Ersten Weltkriegs' ('Spanish Flu 1918/19. Course, Consequences and Interpretations in Germany in the Context of the First World War')¹ the German historian Eckard Michels emphasised how small the real influence of Spanish flu actually was in all aspects of German society in comparison to the developments that occurred during the First World War, especially over the last months of military operations. From the first news about the spread of the disease in Spain at the end of May, all the way through to the end of the most deadliest second wave of influenza in mid-November – almost exactly the time when the German Reich capitulated on the Western front and the war was ended (11 November 1918) – the focus of public opinion was much more concentrated on political and military developments than on the raging disease. Although this claimed many lives, they were definitely much less than the war that had ravaged Germany and Europe already for four years. A similar situation, related to the hierarchy of importance, can be found all over Europe during that time. For example, in descriptions about the setback of Austro-Hungarian forces in the area of Bosnia and Herzegovina in November 1918, there is not one single line about the impact of influenza pandemics in documents from the Austrian archives.²⁵

Michels, in conducting his deep research of German archives discovered that it is impossible to have one unique picture of the development of the disease in Germany. Some cities and regions had suffered a huge impact (such as Freiburg im Breisgau, Marburg, Recklinghausen, Schleswig or Stralsund), while some have been largely spared (Hamburg, Augsburg, Berlin, Dortmund or Karlsruhe).¹ A geographical pattern was not absolutely decisive in the case of Germany. For example, in areas of the Baden region, where it was seen that Karlsruhe used to have very mild epidemics, Freiburg (only about 100 kilometres south),

was quite severely affected. (It is a very interesting coincidence that similar developments occurred during the current COVID-19 pandemic. Although the city of Freiburg has about 30 % less population than Karlsruhe, it has suffered about six times more outcomes in deaths).

In general, it should be concluded that Germany managed to navigate through the waves of the Spanish flu pandemic a little bit better than its counterparts further west. While the geographic spread of the disease implied that western parts should have suffered a bigger impact, as transmission of the disease was mainly happening at the Western front through contact with foreign soldiers (mostly prisoners of war), that proved not to be the case. On the contrary, for Germany it is clear that the Western front tended to have the function of a defensive wall, that enabled the country to be isolated from a worse impact of influenza.¹ Along the other side of the front French, British and American soldiers suffered much more from the lethal waves during the summer and autumn of 1918. It is also apparent that civilian populations suffered more, especially in the US, than in Germany.⁹

This example once again emphasises the connections that are made between the First World War and the Spanish flu. There has always been a very strong claim as to how the pandemics that broke out so strongly out during 1918 was definitely caused by the course of the war. This was mainly connected with the fact that first outbursts of disease, both in the US and in Western Europe, were observed among soldiers, at the front (in Europe) and inside of the camps for preparation for the front (in the US).¹⁸ However, that claim is very questionable. Illustrative presentation of the disease, including the usual perception of 'cytokine storm'¹²⁶ – where immune systems of young, strong bodies of soldiers between 20 and 40 years overreacted and released very large numbers of cytokines, that eventually led to fast drowning in their own blood with dramatic scenes of blood coughing and painful deaths – were so deeply entrenched in the memory of those involved (soldiers, doctors, nurses) that it was almost impossible to let other possibilities enter into calculations on the causes of death or descriptions of the developments of the disease. The facts that the excessively high levels of deaths, especially in 1918, was by far highest in among the 20-40 years age group of the pop-

ulation was almost always connected with a view of the influenza 'genetically programmed' to trigger 'cytokine storm'. Many tend to forget how bloody were summer and autumn months of military operations initiated along the Western front, where millions of lives were lost in brutal

grinding of the war since 1914. This inability to separate victims of war and victims of disease is one of the most crucial problems and challenges in estimations of the real impact of the deadliest pandemics in recent history.

Conclusion

In the general scope of historiography related to the Spanish flu pandemics estimations about the number of victims always play a key role. The essential perception that is of significance about the disease that shook the world in 1918 and 1919 was that it was, and is, almost exclusively connected with numbers. The analysis of scientific (and less scientific) documentations and views throughout the last several decades clearly shows the presence of battle between 'historians' and 'medical historians'. It is where one side tends to overlook the impact of pandemics and to stick with the usual narrative about the First World War with all (mainly political, economic and military) mechanisms that led to its conclusion in November 1918, and where the other side tends to point out the unique significance of the Spanish flu, focusing on the impact of that pandemic on the course of the war, even its outcome, and especially on the huge number of deathly cases, with emphasis on the fact 'that more people died from the Spanish flu than during all of the military operations during World War I'.

How many more? That question became an obsession for some medical historians, and estimations were developed as a purely defensive reaction, for understanding that only huge bold projections can justify an increase and forcing of further rise of attention towards Spanish flu totally prevailed. The result was that some of the estimations clearly evolved into becoming overestimates, out of touch with the demographic reality of 1918 or 1919. Those efforts were, unfortunately, mainly attributed to a general loss of focus, time and resources. For a proper understanding of the history of Spanish flu it is much more important to comprehend how this pandemic emerged (the how and from where this strain of avian flu began its spread among human beings was never clarified!), and

what were the devices of its dynamics in its infectious circulation around the globe, rather than only to calculate if the number of the victims was in the range of 10-20 million or 50-100 million.

The overlap between the Spanish flu and final months of World War I is actually a very good opportunity to research both events from an interdisciplinary point of view. Modern historiography still has lot of opportunities in providing a much more detailed picture about the developments from 1918 and 1919. Now it is clear that evolution of Spanish flu should not be seen only as a derivative product of war, but, on the other side, it is also clear that the impact of the Spanish flu at the outcome of war was not of huge significance.

Future research must concentrate more on archives and looking for mechanisms that enabled the emergence and the spread of the disease. In his final opinion after the publication on the the restored genome of H1N1 influenza virus, Jeffery Taubenberger concluded how the virus from 1918 was in fact the genetic ancestor of all subsequent influenza viruses in 20th and 21 century and how Spanish flu virus indeed is 'the "mother" of all pandemics'. But even he was not at all able to give answers of how that virus emerged and what made it so lethal. All other influneza pandemics in the 20th and 21st century ('Asian flu' 1957, 'Hong Kong flu' 1968, 'Swine flu' 2009) resulted in far fewer victims and were insignificant regarding the impact on demographic and social relations in comparison with the Spanish flu. Huge discrepancies in the level of its lethality are still not understood. There is a huge field of opportunity, but also clear feeling of necessity, for common work of history and medicine in solving those puzzles.

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Conflict of interest

None.

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