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COVID-19 BETWEEN MEDICINE, LAW AND POLITICS

Efforts to establish a coordinated international response to diseases that affect more than one country go back to the mid-19th century. Nowadays World Health Organization is the central point where the interests of 194 member states to preserve the health of their populations are convened, coordinated, and addressed. The critical concept that initiates an international reaction is a public health emergency of international concern, as exemplified by the COVID-19 pandemic. As of October 2022, it had claimed an estimated 20 million lives worldwide. Both in Serbia and elsewhere, the death toll greatly depended on the applied prevention and control measures, which included vaccination. Experiences gained so far point to preferable strategies that should be employed when humanity is confronted with the next similar challenge.

Key words: COVID-19. – Pandemic. – International sanitary law. – Prevention. – Control.

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1. INTRODUCTION

1.1. Legal Basis for International Public Health

International cooperation in epidemic control dates back to the first Sanitary Conference in Paris in 1851. The third cholera pandemic had ravaged most of the world and Europe had an interest to apply efficient control measures – only up to the level that would not unnecessarily jeopardize international movement of goods and people. Fierce arguments were exchanged over the obligation to introduce quarantine, and eventually a joint Sanitary Convention was adopted. Its essence was that, when a dangerous infection spreads across international borders, the movement of people and goods should not be completely suspended. This principle has been maintained ever since.

By the beginning of the Second World War, 13 more sanitary conferences were held, and in 1948 the World Health Organization (WHO) has been founded. In 1951, the WHO adopted the International Sanitary (since 1961, International Health) Regulations (WHO, 1974) focusing on six quarantinable diseases: cholera, plague, smallpox, yellow fever, typhus fever, and louse-borne relapsing fever. Later, the last two diseases were removed from the list, and in 2007, a significantly different concept came into force, upon being approved by the World Health Assembly in May 2005 (WHO 2016). Instead of listing quarantinable diseases, the concept of a public health emergency of international concern (PHEIC) was introduced, as a serious threat that poses a risk to other countries, thus requiring an appropriate coordinated reaction of the international community.

1.2. Basic Terms and Definitions

The key driving force in international health is the PHEIC. It has been defined as “an extraordinary event which is determined ... (i) to constitute a public health risk to other States through the international spread of disease and (ii) to potentially require a coordinated international response” (WHO 2016, 9).

As an extraordinary threat, such an event does not necessarily have to be an infectious disease. The definition comprises, for example, an extremist group dispersing chemical poisons or detonating a “dirty” radioactive bombs. However, thus far all six times that this attention system was activated, the

reason was a viral infection: swine flu (2009), Ebola in West Africa (2014), polio (2014), Zika fever (2016), Ebola in DR Congo (2018) and COVID-19 (2020).

The WHO does not have an officially established single definition of a pandemic, but distinguishes only its six stages. Adhering to those criteria, it declared the COVID-19 pandemic on 11 March 2020. Thus, the emergence of the new coronavirus joined the list of recent pandemics, together with swine flu (2009), AIDS (1981), cholera (1961), Hong Kong flu (1968), and Asian flu (1957), without going further into the past. In all these instances, the standard concept of a pandemic had been met as a condition when a newly emerged or re-emerged contagion occurs in at least two foci (usually in two countries) and is transmitted from there to at least one other continent or WHO region.

An epidemic is an occurrence in a community or region of cases of an illness, specific health-related behavior, or other health-related events clearly in excess of normal expectancy. Endemic implies the usual presence of a disease in an area or group (Last, Radovanović 2001).

Panzootic, epizootic and enzootic are respective terms for the animal kingdom.

2. EXPECTING THE PANDEMIC AND CONFRONTING IT

2.1. On the Eve of the Pandemic

Even for many educated laymen, it was apparent for years that the occurrence of an infectious disease of pandemic proportions was just a matter of time. Bill Gates has consciously warned the public, both at different conferences on the future of humanity and in scientific journals (Gates 2015; Gates 2018), that we were not prepared for such an imminent event. In the summer 2022, he wrote a book on how to confront the next pandemic (Gates 2022). His point was that, at least with the experience gained during the COVID-19 pandemic, an international prevention group should be formed (he referred to it as Global Epidemic Response and Mobilization, GERM).

In 2019, the WHO warned the world that a pandemic may be imminent and listed eight most likely candidates (WHO 2019). COVID-19 was added subsequently. The original list is presented with case-fatality rates in the brackets (Heymann 2015):

- 1) Nipah and henipavirus diseases (40%–75%)
- 2) Ebola virus disease and Marburg virus disease (22%–90%)
- 3) Middle East respiratory syndrome coronavirus (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS) (3%–10% and 34%–37%, respectively)
- 4) Crimean-Congo hemorrhagic fever (10%–40%)
- 5) Lassa fever (15%)
- 6) Rift Valley fever (1%)
- 7) Zika (less than 1%)
- 8) “Disease X”

The list has been accompanied by an explanation: “Disease X represents the knowledge that a serious international epidemic could be caused by a pathogen currently unknown to cause human disease” (WHO 2019). Since COVID-19 has been identified, the next mysterious disease X is waiting to be documented.

Both China and the WHO were exposed to criticism for allegedly reacting late at the very beginning of 2020. China’s officials indeed had a reputation for hiding health (as well as other) information in the past. However, this time they were fairly correct (see timeline). The alertness of the WHO should also not be doubted. If there was a delay, it would not have exceeded 7–8 days.

The issue of the right moment to react is a delicate one. The WHO received a lot of mainly unjustified criticism for proclaiming a PHEIC for the first time in history in connection with the 2009 influenza H1N1 pandemic (swine flu). It was indeed a new pathogen affecting disproportionately often people below the age of 60, although the total number of deaths appeared to be lower than feared. Five years later, the WHO was blamed in the media for failing to declare an occurrence of Ebola fever a PHEIC. Allegedly, the organization was not concerned about a tragedy occurring in Central Africa. However, once the epidemic of Ebola fever was declared a PHEIC, all human and material resources were concentrated in that direction, and many other diseases, notably malaria, took their toll beyond any expectation.

2.2. The Beginning of the Pandemic in China

The new coronavirus evolved in nature and there were two possible explanations for its spread among humans: either by jumping directly from bats, or indirectly, through some as yet unidentified animal host. The index case or patient zero in humans is still unknown. It might well be a scientist who collected viral samples in caves in South China, a laboratory technician who inadvertently got infected in their workplace, or far most likely – people who came in contact or consumed affected animal hosts.

The only certainty is that there was no ill intention, although some people had blamed biological warfare. The idea was so baseless that it was clearly driven by populist motives. At that time, the American National Institute for Allergy and Infectious Diseases (NIAID) was funding research on bat coronaviruses, conducted at the Wuhan Institute of Virology. (NIAID 2022)

The Chinese authorities announced that all virus isolates in December 2019 were genetically identical, implying that the pathogen was probably not transmitted to humans before early November. However, Dr. Peter Ben Embarek, the leader of the WHO team in Wuhan, stated that at least 13 variants of the new coronaviruses were circulating at that time (Walsh 2021), and such differences would require much more than a month to occur.

The timeline of events leading to the declaration of a PHEIC and pandemic could be summarized as follows (Radovanović 2022):

- 17 November 2019 – The first patient exhibited symptoms, according to a secret document, cited by the *South China Morning Post* from Hong Kong.
- 1 December 2019 – Chinese authors announced in a scientific journal that the first patient was recorded in Wuhan, Hubei province. According to Chinese official state reports, this happened on 8 December.
- 26 December 2019 – The head of the Respiratory Diseases Department of Hubei Provincial Hospital ordered staff to wear N95 masks when three members of the same family developed pneumonia.
- 30 December 2019 – Dr. Ai Fen, Head of the Emergency Department of Wuhan Central Hospital, received a report from the laboratory that “SARS coronavirus“ had been isolated from one patient. She sent the sample to Shanghai for sequencing, photographed the finding and forwarded it by phone to her colleagues. She was reprimanded, and one of the recipients, ophthalmologist Li Wenliang, informed a wider circle of colleagues.

- 31 December 2019 – The World Health Organization (WHO) was informed of a pneumonia epidemic of unknown origin in Wuhan, China.
- 31 December 2019 – Eight colleagues discussed the report sent to them by Dr. Ai Fen. On the same day they were ordered by the authorities to write self-critical reviews for spreading the panic.
- 1 January 2020 – The authorities closed the fish market in Wuhan, where game meat was also sold.
- 5 January 2020 – The Shanghai laboratory announced that the new virus was similar to the one that caused SARS. Its sequencing (determination of the sequence of amino acids) had already been carried out by the Chinese Center for Disease Prevention and Control, but the result had not been released.
- 7 January 2020 – The Shanghai laboratory announced that it had identified the virus. It was provisionally called 2019-nCoV (2019 novel coronavirus).
- 8 January 2020 – The Chinese Center for Disease Prevention and Control reported (incorrectly) that the new virus did not have the ability to be transmitted from person to person.
- 9 January 2020 – The Chinese published the sequence of a new virus. This helped scientists in other countries to develop diagnostic tests.
- 11 January 2020 – A worker at the fish market in Wuhan died of the new infection.
- 13 January 2020 – The first case of infection outside of China was confirmed.
- 17 January 2020 – Based on the number of infected Wuhan people who flew by plane, the Imperial College of London concluded that the number of positives in Wuhan was 1,723, not 41. The information, by itself, did not necessarily imply a conscious concealment of data, because the Chinese authorities recorded patients with a severe clinical picture, and seemingly healthy persons were tested at airports around the world.
- 20 January 2020 – Chinese President Xi Jinping warned the citizens to beware of infection during Chinese New Year. On the same day, a scientist from mainland China and one from Hong Kong informed the public that the infection was being transmitted from person to person.
- 23 January 2020 – A cordon sanitaire was established for Wuhan.
- 24 January 2020 – The cordon sanitaire was extended to the entire province of Hubei.

24 January 2020 – Chinese authors published their experiences regarding 41 patients in *The Lancet*: “We fear that the new coronavirus has acquired the ability of efficient inter-human transmission.”

31 January 2020 – The WHO declared the existence of a PHEIC.

7 February 2020 – Li Wenliang died of COVID-19. He was referred to as a whistleblower, but he downplayed his credit by saying he only provided the whistle. He was also credited with the sentence “A healthy society should not speak with one voice.” Instead of an epitaph, a statement was shared on social networks: “Those who bring light to others should not be left to freeze in the snow.”

11 March 2020 – The disease was named COVID-19.

11 March 2020 – WHO Director-General Tedros Ghebreyesus declared a pandemic.

Along with this official version of events, there is an alternative chronology. It is dubious due to retrospective testing, so subsequent contamination of samples cannot be excluded. The point is that biological material from patients or environmental samples in Italy, Brazil and elsewhere were positive for COVID-19 in November 2019, or even a month or two earlier.

2.3. The Beginning of the Pandemic in Serbia

The disease was officially recognized as being present in Serbia on 6 March 2020. The chronology of the first year of the pandemic control was as follows (Radovanović 2022):

5 February 2020 – As subsequently understood, the vitreous body of the eye of an individual autopsied at the Institute of Forensic Medicine in Belgrade contained the causative agent of the new infection. The deceased had not travelled abroad (Bogdanović *et al.* 2021).

24 February 2020 – A woman of Serbian origin came to Serbia, to visit relatives in Niš, traveling from Lugano via Bergamo, at the time the most affected focus in Europe. On her way back she was diagnosed with COVID-19, and was fair enough to inform Serbian officials.

26 February 2020 – The infamous “laughable press conference”, organized by politicians and doctors, was held in Belgrade, where a complete lack of understanding of the epidemiological situation was demonstrated.

- 1 March 2020 – Four contacts of the woman from Lugano, Switzerland, tested positive for COVID-19 at the Infectious Diseases Teaching Hospital in Niš. State officials covered up these four cases in order to schedule the parliamentary elections for June 21.
- 6 March 2020 – Officially announcement that the first sick person in Serbia was discovered on that day.
- 9 March 2020 – Two female students returning from Italy were escorted out to the Student Hospital in Belgrade to be quarantined.
- 13 March 2020 – The Crisis Headquarter for Suppressing the COVID-19 Infectious Disease was formed (there were officially 35 patients in the country on that day).
- 15 March 2020 – A state of emergency was declared, for the first time since the assassination of Prime Minister Đinđić (12 March 2003) and the beginning of NATO aggression (24 March 1999). Such a decision is supposed to be implemented only when the survival of the state or people is at stake.
- 15 March–6 May 2020 – Due to the limited capacity for laboratory diagnostics, the health authorities were unable to detect the sick and their contacts, so vulnerable population groups are isolated instead.
- 19 March 2020 – The Belgrade Nikola Tesla Airport was closed to commercial air traffic. Land borders are also close to passenger traffic. The closing of public service offices does not apply to the tax, customs and treasury administrations.
- 20 March 2020 – An epidemic of major epidemiological importance (state of emergency) was declared for the entire territory of Serbia.
- 20 March 2020 – The first COVID-19 death is reported in Serbia. The patient from Kikinda was infected by a man whose son had returned from Milan, Italy.
- 21 March 2020 – Lockdown: public transport was suspended, restaurants and shopping centers were closed. Gatherings of up to five people were still allowed.
- March 2020 – The measures were implemented incompletely (leaflets and information were not distributed at the border, patients wandered through the poorly organized system) or poorly (quarantines in barracks without necessary sanitary facilities).
- March 2020 – The highest government officials made unbalanced statements ranging from mockery to panic-mongering (see Section 4 for details on Serbia's response to the pandemic).

- 6 May 2020 – From one of Europe’s most rigorous lockdown systems, the opposite extreme was reached on the day that the state of emergency was lifted. Many measures were abruptly abolished or their ignoring was tolerated. This stance deviated from the expected approach and WHO advice.
- 6 May – 21 June 2020 – Everything was subordinated to election activities. Political rallies were held, and images of stadiums packed with 15,000–20,000 attendants went viral. Medical doctors from the Crisis Headquarter were involved in the promotion of the ruling political party.
- 6 May – 21 June 2020 – Medical doctors from the Crisis Headquarter knowingly gave the citizens incorrect information, that the “epidemic was dwindling”, that the virus would disappear during the summer, that its virulence was weakening, that the new hotspots were supposedly only “pockets”, that the “tail” of the epidemic was apparent, and that it was even the right time for deliberate infection.
- 1 June 2020 – Only 18 new infections were recorded, but two days before and after that Monday, there were officially more than 60 new positive cases, and in the following days the upward trend was more pronounced. As a manifestation of the government’s “elections before health” policy, the second wave represented a self-fulfilling prophecy.
- 22 June 2020 – The Balkan Investigative Reporting Network (BIRN) simultaneously published real and official data on the number of cases and deaths from COVID-19 in Serbia. The extent of the deception was convincingly demonstrated; for example on 14 April there were 38 deaths, and only five victims of COVID-19 were acknowledged. Attempts to deny the facts followed, but almost a year later, the health authorities admitted the manipulation.
- 27 June 2020 – Medical doctors involved in the initiative United Against COVID (UPK) publicly appealed to the authorities to genuinely commit in fighting the disease, as opposed to their anemic stance. Officials disparaged the signatories, but their number rose from about 350 to almost 3,000. The Government reacted by creating secret lists of “dissidents”, harassing of signatories, and relegating and dismissing some of them. Two groups of doctors were clearly formed – pro-government doctors and their opponents.
- 30 June 2020 – The Serbian Trade Union of Doctors and Pharmacists (SLFS) and the Party of Freedom and Justice (SSP) filed a criminal complaint against the Prime Minister, the Minister of Health and four other members of the Crisis Headquarter “for deliberately misleading the

public“ regarding the beginning, duration and course of the COVID-19 epidemic, and in connection with the elections, accusing them “of causing general danger, and endangering life and health“.

- 7 July 2020 – Serbian President Aleksandar Vučić announced strict measures, including a curfew. This was followed by spontaneous gatherings, with inserted provocateurs and the beating of protesters. The authorities then returned to the tolerant approach practiced during the May–June pre-election period. The further course of the epidemic measures featured a modified Swedish model, with a tacit emphasis on spontaneous infection.
- 21 July 2020 – The UPK demanded that the Government to replace the Crisis Headquarter, investigate the concealment of data, as well as “stand up against intimidation and politicization, which violate the dignity of healthcare workers.“
- 26 September 2020 – The UPK planned a peaceful march of health workers and citizens in white, with distancing (due to compliance with the measures). Photos of menacing white shadows in the dark would undoubtedly go viral, so the Minister of Health organized an urgent meeting with the UKP. He promised to stop the persecution of member of the UPK and to consider the UPK’s very detailed proposal for efficient measures, according to stages (four) and situations (fifteen). In the following weeks, the minister kept claiming that repeated shipments had not been delivered to him.
- 26 October 2020 – The UPK sent to the Serbian Medical Chamber a request for the right to information; the response of the SMC on November 10 was a classic example of evading questions.
- 30 October 2020 – The Decision of the Government of Serbia on the establishment of the Crisis Headquarter was published in the Official Gazette, months later (13 March–31 October 2010). The composition of members was significantly different than the original list.
- 13 November 2020 – The Law on the Protection of the Population from Communicable Diseases was amended by mentioning the Crisis Headquarter in one half-sentence. Thus, this body was brought into the legal framework.
- 26 February 2021 – The Day of Professional and Political Irresponsibility was marked in front of the Ministry of Health, in memory of the press conference held a year earlier. It was decided that in the future the most irresponsible statement and the most senseless action of the officials would be chosen on that day.

Further development: Serbia continued to be late with control measures, conceiving them more loosely than other countries and implementing them inconsistently, therefore performing poorly.

3. WORLDWIDE RESPONSE TO THE PANDEMIC

Theoretically, all the countries had to choose between four basic strategies for controlling the situation (Rudan 2020; Sacks *et al.* 2022). The first and most radical was *containment or zero COVID strategy*, comprised of “aggressive testing, contact tracing, and isolating,” with occasional short-term “lockdowns” if deemed necessary, and it may be abandoned when a large proportion of population has been vaccinated. The second is the *suppression strategy*: personal protective equipment is used, together with closing businesses, banning public events, etc. The third is *mitigation strategy*: a fairly liberal and tolerant approach, also referred to as “flattening the curve“. At the end of the day, number of cases is not much lower than without measures, but patients are distributed over a longer period of time, making it easier for the healthcare system to deal with the situation. The fourth is the *uncontrolled or herd immunity scenario*, which leads to many unnecessarily long-lasting COVID cases and deaths.

Igor Rudan, Chairman of the International Society for Global Health, compared the countries around the world, according to the scenario they relied on up to 20 April 2021. He used a different terminology but the grouping was basically the same as outlined above (Rudan 2021).

3.1. The Complete Suppression of the Virus (Containment Strategy)

Radical textbook approach, comprised of careful border control, two-week quarantine measures for all those who enter the country, a meticulous approach to all detected cases, the rapid detection and subsequent isolation of all the contacts of an infected individual, and, optionally, a short-term “lockdown“ in limited areas, accompanied by extensive testing. This approach was not particularly financially expensive, and life carried on almost as it would normally. Crude (non-standardized) mortality rates were extremely low:

- up to 1 per million inhabitants: Vietnam, Taiwan, Laos, Thailand, and Bhutan,

- up to 10 per million inhabitants: China, Cambodia, Singapore, and New Zealand,
- up to 100 per million inhabitants: Japan, Australia, Malaysia, South Korea, and Myanmar.

3.2. A Strong First Line of Defense (Suppression Strategy)

Less stringent measures, allowing for a certain level of coexistence with the virus, but without allowing it to spiral out of control. This strategy is based on scientific knowledge and technology, as well as on intensive testing and the isolation of the contacts of the infected. In relative terms, crude mortality rates were low:

- 100–200 per million inhabitants: UAE, Qatar, Norway, Finland, and Iceland,
- 200–400 per million inhabitants: Denmark, Oman, Kuwait, and Bahrain.

3.3. The Relaxation and Subsequent Tightening of Measures (Mitigation Strategy)

A strategy relied on by many countries following the first wave of the pandemic. It was a passive and therefore risky approach. Measures were applied too late, and in spite of applied to the entire populations, they were inefficient. Crude mortality rates ranged from moderately high to high:

- 500–700 per million inhabitants: Canada, and Israel,
- 800–1,000 per million inhabitants: Greece, Germany, Ireland, and the Netherlands,
- 1,000–1,500 per million inhabitants: Austria, Switzerland, Argentina, and Chile,
- 1,500–2,000 per million inhabitants: France, Spain, Italy, Croatia, the United Kingdom, Mexico, and Peru,
- over 2,000 per million inhabitants: Belgium, the Czech Republic, Slovakia, Hungary, Bulgaria, Bosnia and Herzegovina, North Macedonia, Montenegro, and Slovenia.

3.4. The Liberalization of Personal Risk Management (Herd Immunity Strategy)

The decision was to avoid paying too much attention to the pandemic in order to preserve the economy. As may have been expected, crude mortality rates were high:

- 1,359 per million: Sweden,
- 1,749 per million: the United States,
- 1,755 per million: Brazil.

Rudan (2021) compared COVID-19 mortality rates to the percentage change of the gross domestic product in different countries in 2020 (International Monetary Fund 2021). He challenged fears that the enforcement of stringent anti-epidemic measures would lead world economies to double-digit downturns (Sullivan 2020) and referred to IMF estimates that the global economy has dropped 3.3% in 2020, which would be comparable to some previous economic crises triggered by other causes.

This analysis helped the following inferences to be derived: a) differences between countries were more than hundredfold; b) classical non-pharmacological measures (i.e., without vaccines and drugs) may be sufficient for an efficient COVID-19 control strategy, and c) health or economy was a false dilemma. The gross domestic product went up in countries with strict measures (Taiwan +3.1%, Vietnam +2.9%, China +2.3%), and notably decreased in countries that applied a relaxed strategy (Sweden -2.8%, USA -3.5%, Brazil -4.1%).

The last point on the false dilemma appears somewhat controversial. Rudan (2021) argues: "It has been shown that active implementation of classic epidemiological measures enables an almost normal, pre-pandemic way of living within a country's national borders. It favours the continuation of economic growth and it simultaneously saves human lives."

Rudan's reliance on official mortality data would make epidemiologists skeptical. It is true that countries with poor health statistics have been excluded, but it is common knowledge that some countries faked their high COVID-19 mortality rates in order to keep "their reputation". Furthermore, though African countries have not been taken into account due their young population, age standardization should have been expected.

From the point of view of an economist, criticism would be much harsher. As argued by Boris Begović (personal communication) and demonstrated by him (Begović 2022), Rudan's (2021) inferences may be too superficial.

Serbia was not included in the analysis, but the next chapter demonstrates that the country performed very poorly.

The results presented here are to a great extent a consequence of non-pharmaceutical measures, since vaccines had just started to be widely applied. The use of most relevant antiviral drugs has lagged far behind. As an illustration, the European Medicines Agency, as the EU regulatory body for drugs, approved the first two monoclonal antibody therapies: it began to process of evaluating molnupiravir in November 2021, Paxlovid was registered on 28 February 2022, and as of the end of April 2022, favipiravir has not yet been approved. Remdesivir received conditional marketing authorization on 3 July 2020 (it was switched to full marketing authorization on 8 August 2022), but its effect was pretty poor.

Thus, as of the spring of 2021, morbidity and mortality worldwide were largely dependent on the widespread vaccination uptake. Availability of antivirals also had an impact, as did the quality medical care in general.

As of 21 September 2022, 6.6 million deaths had been officially recorded worldwide. The true global COVID-19 death toll is estimated at 21.7 million people (The Economist 2022).

4. SERBIAN RESPONSE TO THE PANDEMIC

Over the course of the two years prior to the end of 2021, Serbia recorded 49,638 more deaths than expected (Health Statistical Yearbook of RS 2022), and by 24 October 2022, the cumulative excess deaths in the country reached 63,684 (Our World in Data 2022a). The most striking fact is that among more than 200 countries and territories in the world, Serbia was not the first but one of the top ranking according to the estimated cumulative excess deaths per 100,000: Bulgaria 1,045, Serbia 905, Russia 902, etc. (Our World in Data 2022b). The same ranking was maintained when crude all-cause mortality rates in the world in 2020 were compared: Bulgaria 18 per 1,000 people, Serbia 17 (The World Bank 2022).

Total numbers of deaths are “hard” data, based on national civil registration and vital statistics offices. Countries may hide specific causes of death but total numbers of deaths could hardly be manipulated. Excess mortality data is derived as a result of comparison with past records, but the World Mortality Dataset, as a source of data for Our World in Data, starts with official national statistics and provides estimates that are updated on a weekly basis. On the other hand, in scientific literature mortality data

on COVID-19 are mostly taken from the World Health Organization, and it simply collects national data as received, without any attempt to challenge its reliability.

It is true that leading countries (in terms of excess mortality) have very old populations. Still, the human factor must be responsible for such an outcome. There are several identified problems Serbia has been facing (Radovanović 2022; Radovanović, forthcoming):

- a) The structure and functioning of the health care system before the pandemic: i) Long overdue reorganization of the system. ii) Neglected investment in human resources. iii) Obedient and often incompetent management selected based on political loyalty. iv) Non-integrated state and private sector. v) Widespread corruption at all levels. vi) Unmet demands for services and extremely long waiting lists. vii) Hasty decisions due to untimely planning, etc.
- b) Unpreparedness: i) Authorities ignored warnings from the WHO and the academic community. ii) On the eve of the pandemic, the country lacked operative plans for emergency situations, sufficient laboratory potentials, and protective equipment. iii) Consequently, strategy was determined by circumstances.
- c) Misunderstanding of the situation, as demonstrated by a strange combination of faked heroism, clowning, and panic-mongering: i) Paradigmatic is the media conference on 26 February 2020, when President Aleksandar Vučić claimed that plum brandy would save the nation, and a spokesman on the part of doctors advised women to go to Italian epidemic foci for “safe” shopping. ii) Particularly dangerous were promises of authorities that “biological superiority” would protect the Serbs. iii) Shortly after joking about the conditions needed for him to comply with individual preventive measures, President Vučić cried that cemeteries would not be large enough to accommodate all the victims of the pandemic. iv) Health Minister Zlatibor Lončar assured the people that Serbia would help China in developing the vaccine, though Serbia had not been able to restore the production of flu vaccine for 15 years. v) Foreign Minister Ivica Dačić (E.S.T. 2020) and the head of the ruling party electoral ticket Danica Grujičić (Novosti online 2020; Palelive 2021) argued that the disease was a case a biological warfare deployed against China, etc.
- d) Inappropriate organization of health services for epidemic control, with bad or unimplementable decisions by the authorities, occasionally leading to the near collapse of the system: i) Cases were instructed to contact epidemiologists, who worked around the clock, but were

unable to meet demand due to their insufficient numbers. ii) There was hardly anyone left to proceed with the epidemiological fieldwork, e.g. identify cases, trace their contacts, proceed with their isolation, etc. iii) Measures involving passengers in international traffic were often inadequate and/or partially implemented. iv) Many people returning from abroad were not informed of the regulations, but were still severely punished, e.g., for 2.5 and three years in prison. v) Some health workers were kept on duty till exhaustion. vi) Physiatrists and dental nurses were sent to “red zones” without previous training. vii) During epidemic waves, patients were forced to wait six or more hours in COVID clinics to be examined, then sent to a laboratory, and again back to the end of a queue, in overcrowded waiting rooms. viii) Non-COVID patients were frequently deprived of necessary care and treatment adjustment, while screening and other preventive activities were practically nonexistent. ix) Mostly due to suboptimal working conditions, COVID-19 took the lives of 147 medical doctors, and most of them were professionally exposed (the death toll among nurses and medical technicians is likely much higher but was never reported).

- e) Professional errors and mistakes (apart from previously listed):
- i) The first two imported contacts were taken to the Student Hospital and unprepared staff was requested to quarantine them, as well as to provide their own personal protective equipment.
 - ii) Authorities decided to set up quarantines in garrisons with a single bathroom and toilet facility per floor.
 - iii) The first group of potential contacts was sent to a refugee camp with densely packed bunk beds.
 - iv) Serological tests were criteria for hospital admission, leading to intrahospital outbreaks.
 - v) Medical staff affected by SARS-CoV-2 frequently complained that clean and contaminated areas were interconnected.
 - vi) Medical staff also pointed out that rules on red and green zones were not strictly observed.
 - vii) A clear vision continuously remained absent.
- f) Questionable legality of the Crisis Headquarter (CH):
- i) It was appointed by the Government, referring to the law that did not provide for it (Law on Government).
 - ii) The Crisis Headquarter was incorporated into the Serbian legal system only six months later, by a single sentence in the amended Law on Prevention and Control of Infectious Diseases.
 - iii) Even in that version of the Law, the key role was assigned to the Republic Committee for Infectious Diseases.
 - iv) The Committee did not meet for months.

- g) Dubious decision on state of emergency: i) Such a radical solution is expected only if the very existence of the country is at risk. ii) The Parliament did not approve this move. iii) It would have been more appropriate to declare a major epidemic, i.e. extraordinary situation (Law on Prevention and Control of Infectious Diseases and Law on Reducing the Risk of Catastrophes). iv) The state of emergency was imposed on 15 March 2020, four days before an epidemic had been declared. v) Some restrictions were unnecessarily cruel, such as the ban on elderly leaving their home, except from 4 a.m. to 7 a.m. on Saturdays.
- h) The dominance of politics over professionalism: i) Preventive and control measures were designed in such a way so as not to interfere with the government popularity. ii) A fictional “victory over Covid” was proclaimed in May 2020, in order to proceed with election activities. iii) Consequently, at the time, doctors from the Crisis Headquarter spread unsubstantiated information that the virus lost its potency and that the epidemic was over. iv) They were actively involved in the elections, supporting the ruling party. v) Since then, a policy of spontaneous transmission has been implemented apparently for any reason other than demagogic. vi) The main effort of the Crisis Headquarter has been aimed at finding excuses for the lack of efficient control measures.
- i) Repression and vengeance by the government: i) The state of emergency was used to persecute the government’s political opponents. ii) Even doctors’ requests to be provided face masks were punished. iii) When 350 medical doctors (their number quickly rose up to 3,000) requested replacement of the Crisis Headquarter in August 2020, the reaction of the authorities was fairly cruel (some doctors were fired, seven heads of departments at the Military Medical Academy hospital were dismissed, directors of health institutions had to provide lists of “dissidents” to the higher authorities, etc.). The repression was temporarily abandoned when doctors threatened to go on strike.
- j) Ambivalent stance of officials toward vaccination: i) As a role model, President Aleksandar Vučić hesitated to be vaccinated for several months and ignored most personal protection measures. ii) Pro-government media did not discourage, and some of them even fueled popular xenophobic sentiments. iii) Regime-favored doctors were given a lot of media time and space to spread doubts about vaccines.

- k) Inappropriately selected priorities: i) The emergency importing of useless chloroquine, as a populist maneuver (just to “prove” that the Government is quicker and more caring than its counterparts elsewhere). ii) Procurement of ventilators far above needs, with President Vučić acting as the sole employee in a shipping company, personally delivering equipment to remote parts of the country. iii) The same track was followed with the provision of vaccines, but they became available well above demand, leading to vast quantities being gifted abroad or destroyed. iv) A portion of population appreciated that resources were invested in the licensed production of the Russian Sputnik V vaccine, but the idea ended up failing. v) The Government’s decision to develop a factory for the production of Chinese inactive vaccines was a short-term gain from a political point of view, but economically, medically and logically could hardly be justified.
- l) Conspiracy: i) Only summary data on morbidity and mortality for the whole country is available. ii) Lack of transparency has been a common feature of all procurements.
- m) Falsification of data: i) Balkan Research Network demonstrated that by 1 June 2020, the officials had hidden 61% of all COVID-19 deaths. ii) In Niš, 79% (283 out of 360) of the bodies buried in sealed coffins disappeared from the statistics. iii) There were days when a single doctor in a rural hospital reported more COVID-19 deaths than officially recognized in the whole country. iv) In the summer of 2020, for 35 days the reported number of COVID-19 deaths did not exceed unity, and the probability for such a distribution is 1:4 million. v) From 4 February to 5 March 2021, the probability of the occurrence of the distribution of deaths officially reported was 1:5 billion (I. Smolić – personal communication).

One may summarize that, with the exception of the first few weeks, Serbia opted for a fairly relaxed approach to controlling the epidemic and was confronted with grave consequences. Many other countries failed to consistently apply optimal measures (Sachs *et al.* 2022) and also suffered losses in human lives.

5. THE FUTURE

The destiny of any pandemic is to gradually transform into an endemic and resume an endemo-epidemic pattern. This means that the agent is constantly present in human populations, but occasionally – usually under

seasonal influences – affects more people than expected. Such epidemic waves will also be a feature of the new coronavirus, but they will interfere with normal human activities much less than the world has witnessed since early 2020.

This shift has been apparent during Serbia's seventh epidemic wave, in the summer of 2022. Numbers of affected people were high (much higher than recorded), but case fatality and mortality rates were 3 to 5 times lower than during the previous wave, in the spring of 2022, which was also caused by the Omicron variant of the agent.

Unless a highly unlikely mutation in the viral genome occurs, the Northern Hemisphere will undergo an increase in the incidence of COVID-19 in the winter of 2022/23, and after the spring of 2023, it will almost certainly become an endemic disease. Infection will increasingly move toward younger age groups. Epidemic waves will be smaller in scale and with lower mortality, for two reasons:

- a) large parts of the population will possess some immunity, acquired either by vaccination or previous infection, and
- b) when susceptible children do get sick, they rarely have a serious clinical picture.

It follows that the direct impact of acute COVID-19 on our lives will be reduced. Unfortunately, the scars caused by the three years of viral terror will remain. Dealing with the consequences of long COVID will be a particular challenge for both individuals and society. Problems are far from restricted to medicine, but rather they extend to the economic, psychological and social spheres.

Occurrence of COVID-19 has helped even laypersons to understand that another pandemic is a very realistic threat. It has been hinted for some time that an avian influenza, in particular the H7N9 subtype, might be the most likely candidate, but another coronavirus or an as yet unrecognized agent would not be a surprise.

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