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Killer flus and the reign of corona virus

Gripes asesinas y el reinado del virus corona

Gripes assassinas e o reinado do coronavírus

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***Abstract*:** This second text in a series of two, which unfolds the history of the largest epidemics and pandemics in the world. In the first, the pandemics preceding COVID-19 were described and analyzed: the plagues that ravaged the Greco-Roman world and other infectious contagious diseases until they reached the pink plague, as the AIDS virus was called. The present text begins with a series of deadly flus that currently end with the generation of the family of corona viruses. The text describes the characteristics of each disease and the emotional, economic, psychological disorders, among others, that were unleashed in each context where the virus proliferated.

***Keywords**:* COVID-19; pandemic; poverty; flus; emotions.

***Resumen*:** Este es el segundo texto de una serie de dos, que desarrollan la historia de las más grandes epidemias y pandemias del mundo. En el primero se describieron y analizaron las pandemias precedentes a la COVID-19: las pestes que asolaron el mundo greco-romano y otras enfermedades infectocontagiosas hasta llegar a la peste rosa, como fue llamado el virus del sida. El presente desarrollo se inicia con una serie de gripes mortíferas que terminan en la actualidad con la generación de los virus de la familia corona. Se describen las características de cada enfermedad y los desórdenes emocionales, económicos, psicológicos, entre otros, que se desataron en cada contexto donde proliferó el virus.

Palabras clave: COVID-19; pandemia; pobreza; gripes; emociones.

***Resumo*:** Este é o segundo texto de uma série de dois, que conta a história das maiores epidemias e pandemias do mundo. No primeiro artigo, foram descritas e analisadas as pandemias que antecederam a COVID-19: as pestes que assolaram o mundo greco-romano e outras doenças infectocontagiosas até chegar à peste rosa, como era chamado o vírus da AIDS. O presente texto começa com uma série de gripes mortais e termina na atualidade com a geração dos vírus corona. Foram descritas as características de cada doença e os distúrbios emocionais, econômicos, psicológicos, entre outros, que se desencadearam em cada contexto em que o vírus proliferou.

***Palavras-chave**:* COVID-19; pandemia; pobreza; gripes; emoções.

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Introduction: social crises and pulmonary disorders

In the first text "The pandemics preceding COVID-19: from the Athen's plague to the pink plague" the ancient world's great epidemic plagues have been explored, as well as other infectious diseases such as smallpox, typhus, syphilis, yellow fever, leprosy, among others, up to the pink plague, named after the virus that generates the AIDS disease. In the same way that history recounts a succession of pests, as were named those that devastated the Greco-Roman world, from the 19th century onwards, a series of deadly flus began, continuing up to the present day with the corona viruses generation.

Remarkably, most of these highly contagious pathologies affect the respiratory tract, causing there and from there different complications and dysfunctionalities in the organism. Beyond the organic diseases, the crises generated in the societies that suffered from these epidemics and pandemics were and are also serious, as well as the psychosocial, emotional, traumatic, economic and other aftermath they had to face.

If crises are defined as states of maximum tension, situations that disturb the stability of systems (Ceberio & Watzlawick, 2003), pandemics really disorganized and fractured societies in their different areas. But with an aggravating factor: they were unforeseen crises. Crises can be categorized as expected and unforeseen. Expected crises are those that accompany the course of human beings' lives: changes in evolutionary cycles, relocations, marriages, deaths, births, illnesses, etc. Unforeseen or unexpected crises can be caused by rare diseases, children's deaths, kidnappings, robberies, epidemics, tidal waves, earthquakes, etc., and affect societies twice as much since they are not part of the expected course of life. Therefore, the emotional, family, social, economic and cognitive impact is greater (Ceberio, 2021a).

Deadly influenza

The Spanish flu occupies a preponderant place among pandemics and it is considered one of the worst, between 1918 and 1920 it destroyed part of humanity. It is estimated that around 100 million people died from this flu (from 3 to 6 % of that time world's population). Even the total number of civilian and military deaths during First World War was lower than the casualties generated by this pathology (Luthy, Ritacco & Kantor, 2018; Pané, 2020).

For the record, the term *Spanish flu* arises because Spain was one of the countries with the highest number of cases, with approximately 8 million people infected and 300,000 casualties (González García, 2013). But the nickname is due to a political situation. The United States and France, with numerous cases as well, were involved in the First World War and with the political, social and economic upheaval, the epidemic was kept a secret. Spain was a neutral country and due to its freedom of press, the pandemic was reported (World Health Organization [WHO], 2020).

The American soldiers who landed in Europe in April 1918 were already carrying the virus. One of its peculiarities was that it mainly affected people who were between 20 and 40 years old, which was very different from other pathologies in which older people are the risk population. At that time, there was no vaccine or antibiotic treatment to treat secondary infections associated to the virus, and efforts were limited to quarantine, disinfection and hygiene, and crowd avoidance (Pané, 2020).

The first influenza A pandemic was the so-called *Russian flu* and the second one, the *Asian flu*. The Russian flu developed between 1889 and 1890 with a very high morbidity rate: approximately 40 % of the world's population fell ill. It caused one million deaths, especially people over 65 years old and young children, due to complications. The influenza A virus (subtype H2N2) was found in birds and it is claimed to have first emerged in Russia (Rodriguez-Maffiotte, 2018) and spread for three years until 1892.

Subsequently, the Asian flu, which emerged in 1957-1958, caused around 1,100,000 deaths. This pandemic especially affected children, adolescents and young adults. Despite the fact that the lethality of the Asian flu was very low, its rapid expansion had a negative impact on the economy and, together with the 1918 epidemic, it recorded the highest number of deaths in the 20th century (Acuña, 2004; Castañeda Guillot & Ramos Serpa, 2020).

Some authors believe that the Asian flu originated from a mutation in wild ducks that combined itself with a pre-existing human strain. The virus was first identified in Guizhou, China, and spread to Singapore, from there to Hong Kong and then to the United States. The rapid development of a vaccine against the H2N2 virus and the availability of antibiotics to battle secondary infections limited its spread, and the epidemic's mortality was kept under control. After 10 years of evolution, the Asian influenza virus disappeared but gave rise to a subtype that eventually caused a new pandemic: the Hong Kong flu (Castañeda Guillot & Ramos Serpa, 2020).

The so-called *Hong Kong flu* developed between 1968 and 1970 and affected almost one million people. The virus responsible for this pandemic is still circulating today and it is considered one of the seasonal influenza strains (Rodriguez-Maffiotte, 2018; Tuells, Caballero, Nolasco & Montagud, 2012). The first record of the outbreak in Hong Kong appeared on July 13, 1968, and by the end of the month it had reached Vietnam and Singapore. In a few months, carried by soldiers returning home from the Vietnam War, it reached the Panama Canal Zone and the United States.

Swine flu was the second pandemic caused by the H1N1 flu virus and it was first identified in the United States in April 2009 and spread rapidly around the world. Mexico was one of the first countries to detect cases, according to the United States Centers for Disease Control and Prevention (CDC; Withington, 2009). It is a new strain of H1N1, which originated when avian, swine and human influenza viruses combined themselves with a Eurasian swine flu virus —that is why it is known as swine flu. The clinical picture is similar

to that typical of seasonal influenza, of spontaneous cure, although the clinical spectrum is extensive, ranging from asymptomatic cases to severe or fatal pneumonia (Rafart, Cuesta & Agulló, 2009).Compared to its high expansion (it is estimated that between 11 and 21 % of the population was infected), mortality was not so high. Influenza A is estimated to have caused more than 400,000 deaths. At least one in five people in the world was infected during the first year of the pandemic (2009-2010) and the mortality rate was only 0.02 % (Salinas, 2009). Finally, after 14 months of pandemic, the WHO declared its end on August 10, 2010.

The reign of corona viruses

Coronaviruses (from the Latin *corona* (crown) or a halo appearance) are named after the way they are visualized under the electron microscope. They are a family of viruses discovered in the 1960s, of unknown origin. Regarding symptoms, the different types generate different diseases, from a cold to a severe form of pneumonia, and almost all of them are treatable, according to the Consejo General de Colegios Farmacéuticos (2020). In that sense, they are not life-threatening; moreover, most people will eventually catch a coronavirus, the simplest one, for instance: a cold. Infection is most common in autumn or winter, time of year for angina, flu, allergies and various respiratory infections.

In the 1960s they were first described in the nasal cavities of patients with colds, and only 6 species of coronaviruses that could infect humans (HCoV) and cause respiratory disease were known. These were: HCoV-229E, HCoV-OC43, HCoV-NL63, HKU1, SARS-CoV and MERS-CoV, which generally cause mild upper respiratory tract infections (Matoba et al., 2015; Sipulwa, Ongus, Coldren & Bulimo, 2016; Zhang et al., 2018). They can rarely generate severe infections in pediatric population and elderly adults. They are endemic globally and account for 10-30 % of upper respiratory tract infections in adults.

SARS-CoV started in November 2002 in Guangdong province (China) and affected approximately 8,096 cases in 29 countries, causing 774 deaths. Until then, coronavirus infections in humans only caused mild infections in immunocompetent patients. The epidemic could be controlled in a short time with few fatalities, without reaching a serious contagion multiplication (Sampathkumar, Temesgen, Smith & Thompson, 2003). Defined as a severe form of pneumonia, its symptoms consist of fever above 38 degrees, respiratory distress and other symptoms such as chills, myalgia, headache and malaise (Castro-Sansores & Góngora-Biachi, 2003). The mortality of SARS-CoV has been estimated at approximately 10 % (Sampathkumar et al., 2003). Since 2004, no cases of SARS-CoV have been reported.

Ten years later, in 2012, another highly pathogenic coronavirus emerged and it was first identified in Saudi Arabia: the Middle East respiratory syndrome coronavirus (MERS-CoV). The first case was a 60-year-old Saudi Arabian man suffering from acute pneumonia who died of kidney failure. The virus dynamics evolved and the first cases were reported in England (Valentin, Montero & Florentini, 2020), Germany and in several Middle East countries (Bratanich, 2015).

From October 2019 onwards, more than 2,400 cases have been reported in different countries, with a fatality rate of 35 %. The symptomatology included severe respiratory problems, in addition to fever, cough and shortness of breath —although at first it may be asymptomatic (Castro-Sansores & Góngora-Biachi, 2003). In the most severe cases, vomiting, diarrhea and even bloody expectoration also occur. Since the emergence of SARS, a large number of coronaviruses have been discovered in bats, which serve as a host. Camels

are likely to be an important reservoir for this type of coronavirus and, according to WHO (2020; ECDC, 2020), an animal source of infection in humans.

The current corona: COVID-19

The story begins in Hubei province in Wuhan (China), in December 2019, with a group of patients diagnosed with pneumonia of unknown origin. Most of them were epidemiologically linked to a wholesale market of live and unprocessed fish, seafood and animals in Hubei province. A high consumption of animal protein, including exotic animals such as snakes and bats, together with poor hygiene standards in food markets made zoonosis possible: the transmission of viruses among animals and from animals to humans (Ahmad et al, 2020; Mackenzie & Smith, 2020).

In mid-December 2019, the first hospitalized cases were reported with symptoms of acute respiratory distress. Most of the patients claimed to be directly or indirectly related to the above mentioned market, which was closed in January 2020. Days later, Chinese researchers announced that they had identified a new type of coronavirus (new coronavirus, 2019-nCoV), ruling out other pathogens such as SARS-CoV, MERS-CoV, influenza virus, avian influenza and adenovirus. At that time, the Chinese crisis (due to the contagion levels) began to spread the news of what was happening and the cases kept on rising (Ramos, 2020), which made it more difficult to track. The disease was named COVID-19, initially novel coronavirus (2019-nCoV), and was mistakenly thought not to be highly contagious as there was no record of person-to-person infection.

After 10 days, there were numerous cases reported (571) in 25 provinces in China. Thereafter, the number of infected patients increased exponentially in mainland China and in different countries, including Vietnam, Taiwan, Thailand, Sri Lanka, Cambodia, Japan, Malaysia, Singapore, Republic of Korea, Nepal, United Arab Emirates, Philippines, India, Iran, Canada, United States, Finland, France, Spain, Australia and Germany (Pulcha Ugarte, Pizarro-Lau, Gastelo-Acosta & Maguiña-Vargas, 2020).

The first case reported in the American continent occurred on January 19, 2020 in the state of Washington (United States). Also, on January 24, the first case of COVID-19 (who had recently visited China) was reported in Europe, specifically in Bordeaux (France). On February 26, 2020, the Brazilian Ministry of Health reported the first case of COVID-19 in South America. On March 11, with 118,000 cases reported in 114 countries and almost 4,300 dead people, the WHO declared that the outbreak of coronavirus disease caused by SARS-CoV2 was considered a pandemic and a "public emergency of international concern", based on the diagnosis of a group of experts and guidelines (Pulcha Ugarte et al., 2020; WHO, 2020).

Symptoms and preventive measures

COVID-19 occurs both in the elderly and in individuals with immunosuppression or chronic diseases such as diabetes, obesity, some types of cancer or chronic lung disease. In severe cases it can cause respiratory failure. Throughout the pandemic, it has been found that about 80 % of infected persons have mild symptoms or are asymptomatic. The most common clinical signs include those of a common cold: fever, cough and respiratory symptoms (dyspnea and other respiratory disturbances). Gastrointestinal symptoms including diarrhea have also been reported (Rodriguez-Morales et al., 2020). In the most severe cases, the

infection can cause bronchitis or pneumonia (either direct viral pneumonia or a secondary bacterial one), severe acute respiratory syndrome, renal failure and even death (Eliezer et al., 2020).

In order to stop and prevent contagion, a series of measures were taken: isolation, temperature control with thermal cameras and digital thermometers, hand and home hygiene, 2-meter distance between people and the use of masks, among others. As the pandemic evolved, new ways of detection, diagnosis and prognosis of the disease have been incorporated (BBC, 2020).

Conclusion

Almost all epidemics and pandemics in history have affected less developed countries with higher levels of economic instability. This means that countries with lower economic possibilities and higher poverty rates undergo a deficit of sociosanitary structure, in addition to very low cultural levels, resulting in greater susceptibility to contagion and a diminished hospital and professional structure to provide care (Cortés, 2006; Klinger, 1989; Marchiori Buss, 2006; Salinas, 2009; Wagstaff, 2002).

There is a strong association between income inequity, health and low social capital (Cortés, 2006). The absence of beds and medical supplies in hospitals, lack of modern equipment, inefficient population behavior and anomie towards avoiding contagion are some of the issues that block health and the reversal of epidemic progression. So, what happens after a pandemic? There may be predictors but each context will act according to the parameters imposed by experience, beliefs, values, health policies and socioeconomic and sociocultural levels, among other factors.

The COVID-19 pandemic is a crisis and it cannot therefore go unnoticed by society. It is impossible to act in denial; the crisis leads to stress. Chronic stress mechanisms weaken the immune system and increase the possibility of contagion (Camps, Sánchez & Sirera, 2006; Chacón & López, 1994). Stress increases by the rise of common emotions, such as those observed in the current context: uncertainty, anxiety/anguish and fear (Ceberio 2021a; 2021b). This emotional triad is absolutely logical (if there is any logic in emotional reaction).

The historical review shows that each pandemic was firmly established in each context and the further back in time the less medical and social resources were available to reverse the situation. However, despite scarce resources, humanity developed possibilities, seized them and created opportunities to restore health. Each pandemic left as a result a great learning experience, sometimes with greater awareness than others.

All the pandemics that were described in the text show the geometric and abrupt reproduction of the disease contagion. Each epidemic or viral outbreak shows the peculiarities of the contexts, such as poverty, lack of hygiene, neglect, hyperkinetic and stressful pace of life, among other factors. This situation reveals the butterfly effect (the flapping of a butterfly's wings at one end of the planet can generate a hurricane elsewhere by domino effect), as part of the Chaos Theory, pointed out by E. Norton Lorenz (Briggs & Peat, 2005; Cazau, 1995). This example, which comes from a proverb, alludes to a holistic vision, in which all events in the universe are related and, inevitably, have an impact on each other and vice versa, but without necessarily implying an enormous magnitude impact from

tiny events. Great events can or cannot be the result of a minimal events chain, but the macros also impact on the small events. In short, a whole complexity impossible to be described.

In this sense, the rise of this pandemic crisis uncovers this systemic perspective where all people are involved to a greater or lesser extent, since they are an active part of an ecological dynamic, which makes them partly responsible for everything that happens. This epistemological thinking model about context and life is at odds with the "virus of individualism", present in many people who operate under selfishness with segregationist attitudes, for instance. Many people with fear of contagion, bordering on paranoia, marginalize people who have been infected or health personnel for being in contact with the sick, in the same way that AIDS patients, syphilitics or lepers were segregated in other pandemics (Miranda, 2021). Some research shows that at the beginning of COVID-19, there were strong xenophobic attitudes, mainly towards Asian people. (Aleixandre-Benavent, Castelló-Cogollos & Valderrama-Zurián, 2020; Bautista, 2020).

Each pandemic activates the foundations of solidarity although, according to today's world, one cannot be so sure of such a statement. Vulnerability and resilience are constructs that have gained meaning in each of the epidemics, delimiting a context that goes from stability to instability and, consequently, to change. Therefore, each person develops different actions based on the different meanings they attribute to the events that burst into their context.

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M. R. C. has contributed in a, b, c, d, e.

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